

Canyon Fuel Company, LLC

**Skyline Mines**

A Subsidiary of Arch Western Bituminous Group, LLC

C/007/005

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## 2007 Annual Report



File in:

- ☐ Confidential
- ☒ Shelf
- ☐ Expandable

Refer to Record No. 0053 Date 6/26/2008  
In C/007/005, 2008 Incoming  
For additional information

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For additional information

**2007 ANNUAL REPORT****Page 1**

To enter text, click in the box and type your response. If a box already contains an entry select the entry and type the replacement. You can use the **tab** key to move from one field to the next. To select a check box, click in the box or type an x.

**GENERAL INFORMATION**

Permitte Name	Canyon Fuel Company, LLC
Mine Name	Skyline Mine
Operator Name (If other then permittee)	
Permit Expiration Date	April 30, 2012
Permit Number	C/007/0005
Authorized Representative Title	Wess Sorensen, Mine Manager
Phone Number	(435) 4482619
Fax Number	(435) 4482636
E-mail Address	<a href="mailto:wsorensen@archcoal.com">wsorensen@archcoal.com</a>
Mailing Address	Skyline Mine HRC 35 Box 380 Helper, UT 84526
Designated Representative	Gregg Galecki
Resident Agent	Corporation Trust Company
Resident Agent Mailing Address	Corporation Trust Company 1209 Orange Street Wilmington, DE
Number of Binders Submitted	

**IDENTIFICATION OF OTHER PERMITS**

Identify other permits that are required in conjunction with mining and reclamation activities.

Permit Type	ID Number	Description	Expiration Date
MSHA Mine ID(s)	42-01566	Skyline Mine	N/A
MSHA Impoundment(s)	None		
NPDES/UPDES Permit(s)	UT 0023540-01, 02, 03	UPDES Permit for Skyline Mine, Rail Loadout, Waste Rock Disposal Site	11/30/09
PSD Permit(s) (Air)	147-98	Approval Order	N/A

**Other**

MSHA Mine ID(s)	1211-UT-09-01566-01	Skyline Scofield Waste Rock Disposal Site	N/A
MSHA Mine ID(s)	1211-UT-09-01566-02	Skyline Mine Site Temporary Waste Rock Disposal Site	N/A
MSHA Mine ID(s)	1211-UT-09-01566-03	Skyline Temporary Waste Rock Disposal Site	N/A
Storm Water Permit	UTR000578	Storm Water Discharge Permit	12/31/11

**RECEIVED****JUN 26 2008**

DIV. OF OIL, GAS &amp; MINING

**CERTIFIED REPORTS**

List the certified inspection reports as required by the rules and under the approved plan that must be periodically submitted to the Division. Specify whether the information is included as Appendix A to this report or currently on file with the Division.

Certified Reports:	Required		Included or DOGM file location		Comments
	Yes	No	Included	Vol, Chapter, Page	
Excess Spoil Piles	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Refuse Piles	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Appendix A (Reports)
Impoundments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Appendix A (Reports)
Other					
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

**COMMITMENTS AND CONDITIONS**

The Permittee is responsible for ensuring annual technical commitments in the MRP and conditions accepted with the permit are completed throughout the year. The Division has identified these commitments below and has provided space for you to report what you have done during the past year for each commitment. If the particular section is blank, no commitment has been identified and no response is required for this report. If a written response is required, it should be filed under Appendix B to this report.

Admin R645-301-100	
Soils R645-301-200	
Has this commitment been acted on this year?  Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>  Not Required for this year. <input type="checkbox"/>	<b>Title: WASTE ROCK SAMPLING</b> <b>Objective:</b> To document chemical characteristics and support reclamation plan using less than four feet of cover and to protect surface and groundwater. <b>Frequency:</b> During periods of deposition at the waste rock site. <b>Status:</b> Quarterly sampling, 1 sample per 2000 tons hauled to disposal site. <b>Reports:</b> Annual reporting. <b>Citation:</b> Vol. 3, Section 4.4, pg. 4-30, 2nd para. And 1988 Soils Guidelines Table 6. Lab Analysis attached.
Has this commitment been acted on this year?  Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>  Not Required for this year. <input type="checkbox"/>	<b>Title: SUBSOIL SAMPLING AT WASTE ROCK SITE.</b> <b>Objective:</b> To provide chemical characteristics of purchased subsoil. <b>Frequency:</b> Sample purchased subsoil for parameters in Table 1 of the Utah 1988 Guidelines. <b>Status:</b> Ongoing with contemporaneous reclamation at the waste rock site. <b>Reports:</b> None specified. Suggest verbal communication with Division and lab analysis to be included in bond release application. <b>Citation:</b> Vol. 3, Section 4.6.4.1, pg. 4-38a, 3rd para. And pg. 4-38b. No subsoil purchased in 2007.



<p>Has this commitment been acted on this year?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Not Required for this year. <input checked="" type="checkbox"/></p>	<p><b>Title: SAMPLING PRIOR TO SLURRY PLACEMENT IN ABANDON UNDERGROUND WORKINGS.</b></p> <p><b>Objective:</b> Protection of groundwater.</p> <p><b>Frequency:</b> Every 450 ft. of advance.</p> <p><b>Status:</b> Ongoing.</p> <p><b>Reports:</b> Notification if parameters are out of compliance with Guidelines for Topsoil and Overburden.</p> <p><b>Citation:</b> Volume 2, Incorporation of 97K-1 and Section 1.2 (at the end of Section 3.2) and Section 3.2.8.</p> <p>Pond Sediment was pumped underground in 2007 – Lab Analysis attached.</p>
<p>Has this commitment been acted on this year?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Not Required for this year. <input checked="" type="checkbox"/></p>	<p><b>Title: SAMPLING OF WASTE ROCK IN TEMPORARY STOCKPILES.</b></p> <p><b>Objective:</b> Protection of surface and groundwater.</p> <p><b>Frequency:</b> If remains in temporary location longer than three months.</p> <p><b>Status:</b> 1 sample/ 2000 tons of temporary stockpiled material.</p> <p><b>Reports:</b> Annual reporting not specified, but assumed to be the same as disposal site sampling (previous paragraph on same page).</p> <p><b>Citation:</b> Vol. 3, Section 4.4, pg. 4-30, 3rd para. And 1988 Soils Guidelines Table 6.</p> <p>Waste Rock was continually moved through the Temporary Waste Rock pile</p>
<p>Biology R645-301-300</p>	
<p>Has this commitment been acted on this year?</p> <p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> <p>Not Required for this year. <input type="checkbox"/></p>	<p><b>Title: CULTURAL RESOURCES</b></p> <p><b>Objective:</b> If during the course of mining operations, previously unidentified cultural resources are discovered, the Permittee shall ensure that the site(s) is not disturbed and shall notify the Division of Oil, Gas, and Mining. The Division, after coordination with OSM, shall inform the Permittee of necessary actions required. The Permittee shall implement the mitigation measures required by the Division within the time frame specified by the Division.</p> <p><b>Frequency:</b> As needed.</p> <p><b>Status:</b> Ongoing.</p> <p><b>Reports:</b> Annual.</p> <p><b>Citation:</b> Permit Condition Sec. 16.</p> <p>Archeological Information submitted in 2007 was included in Waste Rock Expansion application. No previously unidentified cultural resources were discovered.</p>
<p>Has this commitment been acted on this year?</p> <p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Not Required for this year. <input type="checkbox"/></p>	<p><b>Title: MACROINVERTEBRATE SURVEYS</b></p> <p><b>Objective:</b> To determine if mining and mining related activities are impacting the perennial streams located in Woods, Eccles, Burnout and James Canyons.</p> <p><b>Frequency:</b> Fall and Spring every three years beginning in 2007.</p> <p><b>Status:</b> Ongoing.</p> <p><b>Reports:</b> Annual.</p> <p><b>Citation:</b> Appendix A-3, Volume 2, The Macro benthos of Burnout and James Canyon Creek. Benthos of Boardinghouse &amp; Eccles Creek, Fall 2001. Macroinvertebrates of Eccles Creek, October 2004. Volume 1A, Section 2.8, pages 2-71, 71A, B, C, Section 2.8, table 2.8-1a.</p> <p>Field work conducted in 2007, reports are being prepared.</p>



Has this commitment  
been acted on this year?

Yes ☒ No ☐

Not Required for this  
year. ☐

**Title: FISH SURVEYS**

**Objective:** To determine if mining and mining related activities are impacting the perennial streams located in Woods, Eccles, Burnout and James canyons.

**Frequency:** In the Fall Every three years beginning in 2007.

**Status:** Ongoing.

**Reports:** Annual.

**Citation:** Volume 1A, Section 2.8, page 2-71.

Field work conducted in 2007, reports are being prepared.

Landuse, Cultural Resources, Air Quality R645-301- 400

Engineering R645-301-500

Geology R645-301-600

Hydrology R645-301-700

Has this commitment  
been acted on this year?

Yes ☐ No ☒

Not Required for this  
year. ☐

**Title: Age-monitoring of Water.**

**Objective:** Understand possible sources of groundwater inflows

**Frequency:** When inflows of 800 gpm are encountered.

**Status:** No significant inflows in the North Lease.

**Reports:** As needed.

**Citation:** Volume 1, Page 2-35b, Paragraph 2.

No significant inflows (>800 gpm) have been encountered in Mine #2.

Has this commitment  
been acted on this year?

Yes ☐ No ☒

Not Required for this  
year. ☒

**Title: Measurement of Sediment Yield.**

**Objective:** Understand how much excess sediment the mine is contributing to Eccles Creek.

**Frequency:** Annually.

**Status:** Ongoing.

**Reports:** Annually.

**Citation:** Volume 1a, Page 2-43a, Paragraph 2.

Study discontinued per Page 2-45 and 2-46. Flows are currently below 5,000 gpm

Has this commitment  
been acted on this year?

Yes ☒ No ☐

Not Required for this  
year. ☐

**Title: North Lease Perennial Stream Flow Measurement.**

**Objective:** Understand the impact of longwall mining on perennial portions of streams in Winter Quarters and Woods Canyons.

**Frequency:** Monthly, June through October and when accessible, 1 year prior to, during and 1 year after undermining.

**Status:** Ongoing.

**Reports:** Quarterly to database - we should ask for a better map, or list of undermined dates for these sites yearly, otherwise it is impossible to tell if they are within the timeframes.

**Citation:** Volume 1a, Page 2-44a, Paragraph 5.

Data is in DOGM Database.

Has this commitment  
been acted on this year?

Yes ☒ No ☐

Not Required for this  
year. ☐

**Title: Monthly Reporting of Pumped Flows to Electric Lake and Eccles Creek.**

**Objective:** Be aware at all times, of the volume of water being pumped out of the Skyline Mine, and to which drainage.

**Frequency:** Cumulative monthly flows.

**Status:** Ongoing.

**Reports:** Monthly - first week.

**Citation:** Permit Condition 2.

**Submitted Monthly**

Bonding & Insurance R645-301-800

#### Other Commitments

\*Reminder: If equipment has been abandoned during 2007, an amendment must be submitted that includes a map showing its location, a description of what was abandoned, whether there were any hazardous or toxic materials and any revision to the PHC as necessary.

#### REPORTING OF OTHER TECHNICAL DATA

List other technical data and information as required under the approved plan, which must be periodically submitted to the Division. Specify whether the information is included as Appendix B to this report or currently on file with the Division.

Subsidence and Vegetation Monitoring information is included in Appendix B. Quarterly Water Monitoring information has been submitted to the Division Electronic Database periodically during the year. No Soils Monitoring, Raptor Surveys, Geological, Engineering, Non-coal Waste, or Abandoned Equipment was required to be submitted for the 2007 calendar year.

#### LEGAL, FINANCIAL, COMPLIANCE AND RELATED INFORMATION

Change in administration or corporate structure can often bring about necessary changes to information found in the mining and reclamation plan. The Division is Requesting that each permittee review and update the legal, financial, compliance and related information in the plan as part of the annual report. Please provide the Department of Commerce, Annual Report of Officers, or other equivalent information as necessary to ensure that the information provided in the plan is current. Provide any other change as necessary regarding land ownership, lease acquisitions, legal results from appeals of violations, or other changes as necessary to update information required in the mining and reclamation plan. Include certified financial statements, audits or worksheets, which may be required to meet bonding requirements. Specify whether the information is currently on file with the Division or included as Appendix C to the report.

#### Legal / Financial Update

Required  
Yes No

Included or DOGM File location  
Included Vol, Chapter, Page

#### Comments

Department of Commerce, Annual Report Officers	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Other</b>					
Officers and Directors -	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Submitted by V.Miller for all

General Chapter 1					CFC Mines
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

## MINE MAPS

*Copies of mine maps, current and up-to-date through at least December 31, 2007, are to be provided to the Division as Appendix D to this report in accordance with the requirements of R 645-301-525.240. These map copies shall be made in accordance with 30 CFR 75.1200 as required by MSHA. Upon request, the Division shall keep mine maps confidential. Please provide a CD.*

[illegible]



## OTHER INFORMATION

*Please provide any comments of further information to be included as part of the Annual Report. Any other attachments are to be provided as Appendix E to this report. If information is submitted as a group rather than by individual mine, please identify each of the mine's data in the list below.*

**Additional attachment to this report?**

**Yes** ☐

**No** ☒

[illegible]

**APPENDIX A**

**Certified Reports**

Excess Spoil Piles  
Refuse Piles  
Impoundments

As required under R645-301-514

**CONTENTS**

Waste Rock Quarterly Inspections  
Sediment Pond Quarterly Inspections  
Waste Rock Analysis  
Underground Slurry – Sediment Pond Analysis

..... <b>INSPECTION AND CERTIFIED REPORT ON EXCESS SPOIL PILE OR REFUSE PILE</b>			
<b>Permit Number</b>	C/007/005	<b>Report Date</b>	February 5, 2008
<b>Mine Name</b>	Skyline Mines		
<b>Company Name</b>	Canyon Fuel Company, LLC		
<b>Excess Spoil Pile or Refuse Pile Identification</b>	<b>Pile Name</b>	Skyline Waste Rock Site	
	<b>Pile Number</b>	1211-UT-09-01566-01	
	<b>MSHA Mine ID Number</b>	42-01566	
<b>Inspection Date</b>	November 26, 2007		
<b>Inspected By</b>	Carl Winters / Gregg Galecki		
<b>Reason for Inspection</b> (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		Quarterly	
		<b>Attachments to Report?</b> <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	
<b>Field Evaluation</b>			
<p><i>No significant problems with the waste site were observed during the 4th quarter 2007. No waste rock material was hauled to the site during the 4th quarter 2007.</i></p> <p>1.     <b>Foundation preparation, including the removal of all organic material and topsoil.</b></p> <p>No waste rock placement or contemporaneous reclamation was performed at the site during the quarter; only regular maintenance was performed. No topsoil/substitute topsoil piles remain on site – all the material has been used.</p>			
<p>2.     <b>Placement of underdrains and protective filter systems.</b></p> <p>No underdrains are present or required at this site. Areas that are to final grade, are capped with the prescribed amount of topsoil, seeded, top-dressed with straw, then held in place with a matting material.</p>			
<p>3.     <b>Installation of final surface drainage systems.</b></p> <p>Existing surface is not at final contour. Therefore, final surface drainages have not yet been constructed. All surface runoff from the refuse pile is treated by the sediment pond. Runoff from the main access road below the sediment pond is treated by straw bale dikes. The sediment pond was cleaned of sediment in August 2007.</p>			
<p>4.     <b>Placement and compaction of fill materials.</b></p> <p>Material that was hauled to the site during the 3<sup>rd</sup> quarter 2007 was generated from sediment cleaned out from the Waste Rock, Rail Loadout and Mine site sedimentation ponds. The material originally contained sufficient moisture that prohibited proper compaction. The material has been spread out in an approximate 3-4 foot layer that will not impound water and will adequately drain until it is sufficiently dry for proper compaction. Proper compaction will take place in 2008 following natural minor percolation of the snowpack, and drying of the material. The waste rock will be re-worked, and placed in lifts of 24-inches or less and compacted in place using a tracked dozer and sheeps-foot roller.</p>			
<p>5.     <b>Final grading and revegetation of fill.</b></p> <p>Contemporaneous reclamation of the waste rock pile is taking place as the site is backfilled with waste rock. The backfill slopes are built to 1 1/2h:1v or less and seeded as described in the final reclamation plan. The seed mix specified in the Reclamation Plan is planted after the placement of topsoil.</p>			



**INSPECTION AND CERTIFIED REPORT ON EXCESS  
SPOIL PILE OR REFUSE PILE**

**6. Appearances of instability, structural weakness, and other hazardous conditions.**

No obvious instability or structural weakness was noted during the 4th quarter 2007 inspection. Along the north slope reclaimed in 2006, minor undulations were noted in the reclaimed surface. No signs of water concentration were noted on the slope and re-vegetation density is comparable to a one-season growth. The slope will continue to be observed closely to determine whether any instability or settling is occurring. Survey points were established along the slope to monitor any movement. The survey points were resurveyed during the 4<sup>th</sup> quarter and no movement was observed. Minor variances in the points were within a reasonable margin of error. Notes of the survey are attached.

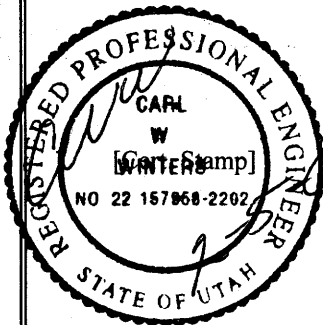
The sedimentation pond was snow covered and contained no water at the time of the inspection.

No hazardous conditions were observed at the time of the inspection.

**7. Other Comments. Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.**

Historic records indicated the total storage capacity was approximately 334,125 tons. The Waste Rock area was surveyed with a total station during September 2005, determining that the north toe of the pile could be extended under the current permit to accommodate additional storage. The pile was resurveyed again in December 2006. The 2006 survey estimates approximately 25,000 to 30,000 tons of capacity remain at the site. During the quarter, no additional material was hauled to the site. An application to expand the size of the refuse pile has been submitted to the Division, approval of the expansion is anticipated during the 1<sup>st</sup> quarter 2008.

**Certification Statement**



I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself, or under my direction and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

By: Carl W. Winters, Engineering Manager

(Full Name and Title)

Signature: Carl W. Winters Date: February 5, 2008

# WASTE ROCK SETTLING POINTS

POINT #	DIFFERENCE			ADJUSTMENT	
	HOR	VERT	HOR %	HOR	VERT
1	.046	.03	.012	.031	.01
2	.064	.04	.018	.049	.02
3	.030	.03	.009	.017	.01
4	.046	.06	.008	.031	.04
5	.020	.02	.008	.015	<del>0</del>
6	.021	.05	.010	.011	.03
7	.012	.04	.005	.012	.02
8	.017	.03	.006	.015	.01
9	.033	.02	.011	.027	<del>0</del>
* 10	.068	.04	.021	.065	.02
11	.034	.02	.010	.017	<del>0</del>
12	.040	.02	.010	.020	<del>0</del>

\* Possible disturbance by surveyor when shooting second time site was stepped on when trying to fix it in the snow.

<b>INSPECTION AND CERTIFIED REPORT ON EXCESS SPOIL PILE OR REFUSE PILE</b>			
<b>Permit Number</b>	C/007/005	<b>Report Date</b>	November 2, 2007
<b>Mine Name</b>	Skyline Mines		
<b>Company Name</b>	Canyon Fuel Company, LLC		
<b>Excess Spoil Pile or Refuse Pile Identification</b>	<b>Pile Name</b>	Skyline Waste Rock Site	
	<b>Pile Number</b>	1211-UT-09-01566-01	
	<b>MSHA Mine ID Number</b>	42-01566	
<b>Inspection Date</b>	September 21, 2007		
<b>Inspected By</b>	Carl Winters / Gregg Galecki		
<b>Reason for Inspection</b> (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		Quarterly	
		<b>Attachments to Report?</b> <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	
<b>Field Evaluation</b>			
<p><i>No significant problems with the waste site were observed during the 3rd quarter 2007. Approximately 754 yd<sup>3</sup> of sediment pond material was hauled to the site during the 3<sup>rd</sup> quarter 2007.</i></p> <p>1.     <b>Foundation preparation, including the removal of all organic material and topsoil.</b></p> <p>No waste rock placement or contemporaneous reclamation was performed at the site during the quarter; only regular maintenance was performed. No topsoil/substitute topsoil piles remain on site – all the material has been used.</p> <p>2.     <b>Placement of underdrains and protective filter systems.</b></p> <p>No underdrains are present or required at this site. Areas that are to final grade, are capped with the prescribed amount of topsoil, seeded, top-dressed with straw, then held in place with a matting material.</p> <p>3.     <b>Installation of final surface drainage systems.</b></p> <p>Existing surface is not at final contour. Therefore, final surface drainages have not yet been constructed. All surface runoff from the refuse pile is treated by the sediment pond. Runoff from the main access road below the sediment pond is treated by straw bale dikes. The sediment pond was cleaned of sediment in August 2007.</p> <p>4.     <b>Placement and compaction of fill materials.</b></p> <p>Material that was hauled to the site during the 3<sup>rd</sup> quarter 2007 was generated from sediment cleaned out from the Waste Rock, Rail Loadout and Mine site sedimentation ponds. The material originally contained sufficient moisture that prohibited proper compaction. The material has been spread out in an approximate 3-4 foot layer that will not impound water and will adequately drain until it is sufficiently dry for proper compaction. Gob is typically placed in lifts of 24-inches or less and compacted in place using a tracked dozer and sheeps-foot roller.</p> <p>5.     <b>Final grading and revegetation of fill.</b></p> <p>Contemporaneous reclamation of the waste rock pile is taking place as the site is backfilled with waste rock. The backfill slopes are built to 1 1/2h:1v or less and seeded as described in the final reclamation plan. The seed mix specified in the Reclamation Plan is planted after the placement of topsoil.</p>			



**INSPECTION AND CERTIFIED REPORT ON EXCESS  
SPOIL PILE OR REFUSE PILE**

**6. Appearances of instability, structural weakness, and other hazardous conditions.**

No obvious instability or structural weakness was noted during the 3rd quarter 2007 inspection. Along the north slope reclaimed in 2006, minor undulations were noted in the reclaimed surface. No signs of water concentration were noted on the slope and re-vegetation density is comparable to a one-season growth. The slope will continue to be observed closely to determine whether any instability or settling is occurring.

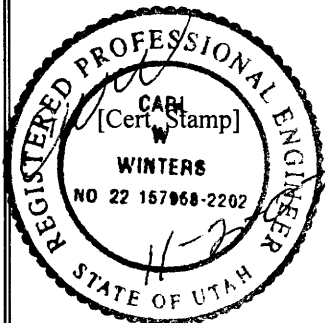
The sedimentation pond contained minor water at the time of the inspection.

No hazardous conditions were observed at the time of the inspection.

**7. Other Comments. Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.**

Historic records indicated the total storage capacity was approximately 334,125 tons. The Waste Rock area was surveyed with a total station during September 2005, determining that the north toe of the pile could be extended under the current permit to accommodate additional storage. The pile was resurveyed again in December 2006. The 2006 survey estimates approximately 25,000 to 30,000 tons of capacity remain at the site. During the quarter, approximately 754 yds<sup>3</sup> or approximately 916 tons of waste from the sediment ponds was hauled to the site.

**Certification Statement**



I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself, or under my direction and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

By: Carl W. Winters, Engineering Manager

(Full Name and Title)

Signature: *Carl W. Winters* Date: November 2, 2007

<b>INSPECTION AND CERTIFIED REPORT ON EXCESS SPOIL PILE OR REFUSE PILE</b>			
<b>Permit Number</b>	C/007/005	<b>Report Date</b>	July 6, 2007
<b>Mine Name</b>	Skyline Mines		
<b>Company Name</b>	Canyon Fuel Company, LLC		
<b>Excess Spoil Pile or Refuse Pile Identification</b>	<b>Pile Name</b>	Skyline Waste Rock Site	
	<b>Pile Number</b>	1211-UT-09-01566-01	
	<b>MSHA Mine ID Number</b>	42-01566	
<b>Inspection Date</b>	June 11, 2007		
<b>Inspected By</b>	Carl Winters / Gregg Galecki		
<b>Reason for Inspection</b> (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		Quarterly	
		<b>Attachments to Report?</b> X No    Yes	
<b>Field Evaluation</b>			
<p><i>No significant problems with the waste site were observed during the 2nd quarter 2007. No material was hauled to the waste site during the 2<sup>nd</sup> quarter 2007.</i></p> <p><b>1. Foundation preparation, including the removal of all organic material and topsoil.</b></p> <p>No waste rock placement or contemporaneous reclamation was performed at the site during the quarter; only regular maintenance was performed. No topsoil/substitute topsoil piles remain on site – all the material has been used.</p>			
<p><b>2. Placement of underdrains and protective filter systems.</b></p> <p>No underdrains are present or required at this site. Areas that are to final grade, are capped with the prescribed amount of topsoil, seeded, top-dressed with straw, then held in place with a matting material.</p>			
<p><b>3. Installation of final surface drainage systems.</b></p> <p>Existing surface is not at final contour. Therefore, final surface drainages have not yet been constructed. All surface runoff from the refuse pile is treated by the sediment pond. Runoff from the main access road below the sediment pond is treated by straw bale dikes. The sediment pond was cleaned of sediment in July 2004.</p>			
<p><b>4. Placement and compaction of fill materials.</b></p> <p>No material was hauled to the waste rock site in the 2nd quarter of 2007. Gob is typically placed in lifts of 24-inches or less and compacted in place using a tracked dozer and sheeps-foot roller.</p>			
<p><b>5. Final grading and revegetation of fill.</b></p> <p>Contemporaneous reclamation of the waste rock pile is taking place as the site is backfilled with waste rock. The backfill slopes are built to 1 1/2h:1v or less and seeded as described in the final reclamation plan. The seed mix specified in the Reclamation Plan is planted after the placement of topsoil.</p>			

INSPECTION AND CERTIFIED REPORT ON EXCESS  
SPOIL PILE OR REFUSE PILE

6. Appearances of instability, structural weakness, and other hazardous conditions.

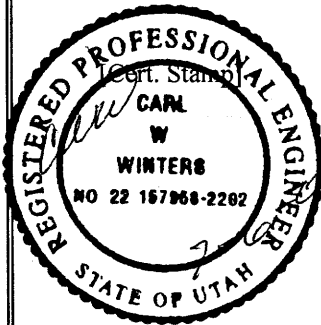
No instability or structural weakness was noted during the 2nd quarter 2007 inspection. The sedimentation pond contained no water at the time of the inspection.

No hazardous conditions were observed at the time of the inspection.

7. Other Comments. Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.

Historic records indicated the total storage capacity was approximately 334,125 tons. The Waste Rock area was surveyed with a total station during September 2005, determining that the north toe of the pile could be extended under the current permit to accommodate additional storage. The pile was resurveyed again in December 2006. The 2006 survey estimates approximately 25,000 to 30,000 tons of capacity remain at the site.

Certification Statement



I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself, or under my direction and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

By: Carl W. Winters, Engineering Manager

(Full Name and Title)

Signature: *Carl W. Winters* Date: July 6, 2007



**INSPECTION AND CERTIFIED REPORT ON EXCESS SPOIL PILE OR REFUSE PILE**

**Permit Number** C/007/005 **Report Date** March 23, 2007

**Mine Name** Skyline Mines

**Company Name** Canyon Fuel Company, LLC

**Excess Spoil Pile or Refuse Pile Identification**

**Pile Name** Skyline Waste Rock Site

**Pile Number** 1211-UT-09-01566-01

**MSHA Mine ID Number** 42-01566

**Inspection Date** March 9, 2007

**Inspected By** Carl Winters / Gregg Galecki

**Reason for Inspection**

(Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)

Quarterly

**Attachments to Report?** ☒ No ☐ Yes

**Field Evaluation**

*No significant problems with the waste site were observed during the 1st quarter 2007. Approximately 6,648 tons were hauled to the site during the 1st quarter 2007, with all the waste rock being hauled in January and February.*

1. **Foundation preparation, including the removal of all organic material and topsoil.**

Minor topsoil/substitute topsoil placement was conducted during the quarter. The northern face of the pile where waste rock was placed during the 4<sup>th</sup> quarter 2006 was covered with topsoil/substitute topsoil. No topsoil/substitute topsoil piles remain on site – all the material has been used.

2. **Placement of underdrains and protective filter systems.**

No underdrains are present or required at this site. Areas that are to final grade, are capped with the prescribed amount of topsoil, seeded, top-dressed with straw, then held in place with a matting material.

3. **Installation of final surface drainage systems.**

Existing surface is not at final contour. Therefore, final surface drainages have not yet been constructed. All surface runoff from the refuse pile is treated by the sediment pond. Runoff from the main access road below the sediment pond is treated by straw bale dikes. The sediment pond was cleaned of sediment in July 2004.

4. **Placement and compaction of fill materials.**

Approximately 6,648 tons of gob were hauled to the waste rock site in the 1st quarter of 2007. Gob was placed in lifts of 24-inches or less and compacted in place using a tracked dozer and sheeps-foot roller. Material was placed along the north face of the pile, along the top of the pile.

5. **Final grading and revegetation of fill.**

Contemporaneous reclamation of the waste rock pile is taking place as the site is backfilled with waste rock. The backfill slopes are built to 1 1/2h:1v or less and seeded as described in the final reclamation plan. The seed mix specified in the Reclamation Plan is planted after the placement of topsoil. Areas covered with topsoil during the quarter were not seeded or covered with straw, but the area is very small.

INSPECTION AND CERTIFIED REPORT ON EXCESS  
SPOIL PILE OR REFUSE PILE

6. Appearances of instability, structural weakness, and other hazardous conditions.

No instability or structural weakness was noted during the 1st quarter 2007 inspection. The sedimentation pond contained minor water at the time of the inspection.

No hazardous conditions were observed at the time of the inspection.

7. Other Comments. Describe any changes in the geometry of the Excess Spoil/Refuse Pile structure, instrumentation, average and maximum lifts of materials placed in the pile, elevations of active benches, total and remaining storage capacity of the structure, evidence of fires in the pile and abatement of such fires, volumes of materials placed in the structure during the year, and any other aspect of the structure affecting its stability or function which has occurred during the reporting period.

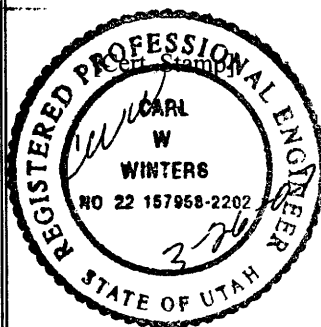
Historic records indicated the total storage capacity was approximately 334,125 tons. The Waste Rock area was surveyed with a total station during September 2005, determining that the north toe of the pile could be extended under the current permit to accommodate additional storage. The pile was resurveyed in December 2006. The 2006 survey estimates approximately 25,000 to 30,000 tons of capacity remain at the site.

Certification Statement

I hereby certify that; I am experienced in the construction of earth and rock fills; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of earth and rock fills in accordance with the certified and approved designs for this structure; that the fill structure has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself, or under my direction and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

By: Carl W. Winters, Engineering Manager

(Full Name and Title)



Signature: Carl W. Winters Date: March 23, 2007

<b>IMPOUNDMENT INSPECTION AND CERTIFIED REPORT</b>			
<b>Permit Number</b>	C/007/005	<b>Report Date</b>	December 24, 2007
<b>Mine Name</b>	Skyline Mine		
<b>Company Name</b>	Canyon Fuel Company		
<b>Impoundment Identification</b>	<b>Impoundment Name</b>	Mine Site Sediment Pond	
	<b>Impoundment Number</b>	001	
	<b>UPDES Permit Number</b>	UT0023540	
	<b>MSHA ID Number</b>	NA	
<b>IMPOUNDMENT INSPECTION</b>			
<b>Inspection Date</b>	November 26, 2007		
<b>Inspected By</b>	Carl Winters / Gregg Galecki		
<b>Reason for Inspection</b> (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		Quarterly	
<p><b>1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.</b></p> <p>No signs of instability were observed. No hazardous conditions were observed during the inspection of the pond. The pond had a sheet of ice covering the surface.</p>			
<p><b>Required for an impoundment which functions as a SEDIMENTATION POND.</b></p>	<p><b>2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.</b></p> <p>Sediment Storage Capacity: 187,427 ft<sup>3</sup> (based on 2005 survey and MRP as-built drawings)          60% Elevation: 8568.5 feet ASL (above sea level)          100% Elevation: 8572.45 feet ASL          The elevation of the sediment within the pond at the discharge point was not collected due to ice during the 4<sup>th</sup> quarter inspection. A land survey of the pond indicated a sediment depth of 8567.92 ft. ASL.</p>		
	<p><b>3. Principle and emergency spillway elevations.</b></p> <p>Principal and Emergency Spillway Elevations: 8579.6 feet ASL (The outlet structure for Pond 001 serves as both the Principal and Emergency Spillways)          Total volume of pond at Spillway: 350,437 ft<sup>3</sup>          Required runoff storage: 163,010 ft<sup>3</sup>          100% Sediment storage: 187,427 ft<sup>3</sup>          60% Sediment storage: 112,456 ft<sup>3</sup></p>		

<b>IMPOUNDMENT INSPECTION AND CERTIFIED REPORT</b>		
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- 4. Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

Water in the pond was frozen during the inspection – the level was close, but not discharging. The sediment pond has discharged intermittently during the quarter. A sample of the mine discharge water, including this pond's discharge, has been taken on weekly basis throughout the quarter as required by the Mine's UPDES permit. On a biweekly basis the water sample is analyzed for total iron. The frequency of analysis for Total Phosphorus has been reduced from monthly to quarterly per DWQ direction. Weekly samples include oil and grease, total dissolved solids, total suspended solids, pH and conductivity. Flow is record by in-line flow meters.

Surface water is collected from the upper mine pad and discharged to the pond through a culvert located on the west end of the pond. The culvert is functioning as designed. A small delta has formed below the culvert. The outlet structure was working as designed and appears to be in good working condition. The pond is an incised structure. Minimal vegetation exists on the banks.

A series of turbidity curtains are installed in the pond to help reduce the suspended load within the pond.

The pond was cleaned in October 2007.

- 5. Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

The overall geometry of the pond has not changed based on both the cleaning and land survey conducted in October 2007. The survey indicated portions of the pond are slightly deeper than the as-built construction. The pond has discharged intermittently this quarter. The minimum water elevation has been 8567.92– with no water in the pond this represents the sediment level. Water height over the lip of the discharge pipe has varied between 0.00 and 0.06 feet. Based on the October 2007 survey, approximately 19,858 ft<sup>3</sup> of sediment storage is currently available. The sediment depth in the pond will be closely monitored in 2008 to ensure adequate sediment capacity.

<b>Qualification Statement</b>	<p>I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.</p> <p><b>Signature:</b> _____ <b>Date:</b> _____</p>
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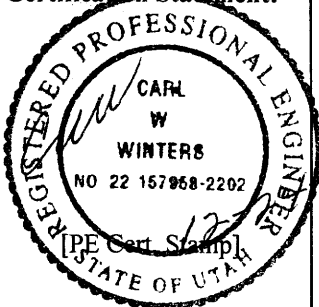
## CERTIFIED REPORT

IMPOUNDMENT EVALUATION (If NO, explain under Comments)	YES	NO
1. Is impoundment designed and constructed in accordance with the approved plan?	Yes	
2. Is impoundment free of instability, structural weakness, or any other hazardous condition?	Yes	
3. Has the impoundment met all applicable performance standards and effluent limitations from the previous date of inspection?	Yes	

### COMMENTS AND OTHER INFORMATION

Exceedances of the tons/per day permit limit have occurred in this quarter and throughout 2007. However, since the water quality was acceptable with regard to all other parameters and Skyline Mine is participating in a downstream salinity reduction program with the Utah Division of Water Quality (as allowed in the Mines' UPDES Permit), no enforcement action is warranted.

#### Certification Statement:



I hereby certify that, I am experienced in the construction of impoundments; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself or under my direction and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability in accordance with the Utah R645 Coal Mining Rules.

By:

Carl W. Winters, Engineering Manager

Signature: Carl W. Winters Date: December 24, 2007

P.E. Number & State:

Utah 22 157958-2202

<b>IMPOUNDMENT INSPECTION AND CERTIFIED REPORT</b>			
<b>Permit Number</b>	C/007/005	<b>Report Date</b>	December 12, 2007
<b>Mine Name</b>	Skyline Mines		
<b>Company Name</b>	Canyon Fuel Company		
<b>Impoundment Identification</b>	<b>Impoundment Name</b>	Rail Loadout Sediment Pond	
	<b>Impoundment Number</b>	002	
	<b>UPDES Permit Number</b>	UT0023540	
	<b>MSHA ID Number</b>	NA	
<b>IMPOUNDMENT INSPECTION</b>			
<b>Inspection Date</b>	November 26, 2007		
<b>Inspected By</b>	Carl Winters / Gregg Galecki		
<b>Reason for Inspection</b> (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		Quarterly	
<p><b>1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.</b></p> <p>No instability of the embankment was noted during the inspection. No hazardous conditions were noted at the time of the inspection. The pond was completely emptied of sediment in the 3<sup>rd</sup> quarter 2007, and a thorough inspection for structural weaknesses was possible at that time.</p>			
<b>Required for an impoundment which functions as a SEDIMENTATION POND.</b>	<p><b>2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.</b></p> <p>Sediment Storage Capacity: 22,963 ft<sup>3</sup>          60% Elevation: 7914.46 feet ASL (above sea level)          100% Elevation: 7915.40 ASL          The current elevation of the sediment within the pond at the discharge point was not determined – pond was frozen. The sediment level was 6.40 ft below the primary spillway in October. No significant amount of material appears to have been added since then.</p>		
	<p><b>3. Principle and emergency spillway elevations.</b></p> <p>Principle Spillway Elevation: 7919.7 feet ASL          Emergency Spillway Elevation: 7922 feet ASL          Total volume of pond at Spillway: 68,701 ft<sup>3</sup>          Required runoff storage: 45,738 ft<sup>3</sup>          100% Sediment Storage: 22,963 ft<sup>3</sup>          60% Sediment Storage: 13,778 ft<sup>3</sup></p>		



4. **Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

The water level was 2.21 feet below the discharge pipe at the time of the inspection. The depth to the bottom of the pond was measured at 7,912.3 feet ASL on survey conducted on 9/23/07. This is 7.4 feet below the spill point of the principal spillway.

The pond was not discharging at the time of the inspection. The pond did not discharge during the 4th quarter 2007, although water/ice was present the majority of the time. The pond embankment appears stable and without noticeable erosion. The footprint of the pond remains unchanged. Stable grasses vegetate and stabilize the out slopes of the embankment.

The pond was completely drained and cleaned during the 3<sup>rd</sup> quarter 2007. Based on the combination a 2007 land survey conducted of the pond when it was empty relative to the elevation of the sediment from the 2<sup>nd</sup> quarter 2007 inspection, and calculating the amount of material moved to the Waste Rock site, approximately 13,000 ft<sup>3</sup> of sediment was removed from the pond. The 2007 survey indicated the available sediment capacity is approximately 22,963 ft<sup>3</sup>.

A second turbidity curtain was added to the pond after the cleaning to help contain a majority of material in the upper or west side. The pond currently has two turbidity curtains.

5. **Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

The geometry of the pond does not appear to have changed with the removing of sediment in September 2007. The sediment volume in the pond after sediment removal was estimated to be zero ft<sup>3</sup> with a remaining sediment storage capacity of 22,963 ft<sup>3</sup>. The volume calculations are based on a survey conducted in the Fall 2007 following the cleaning of the pond. No measurement of sediment was conducted during the 4<sup>th</sup> quarter inspection. A visual inspection indicated minimal additional sediment was accumulated during the quarter.

**Qualification Statement**

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

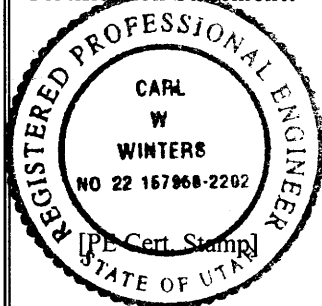
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## CERTIFIED REPORT

IMPOUNDMENT EVALUATION (If NO, explain under Comments)	YES	NO
1. Is impoundment designed and constructed in accordance with the approved plan?	Yes	
2. Is impoundment free of instability, structural weakness, or any other hazardous condition?	Yes	
3. Has the impoundment met all applicable performance standards and effluent limitations from the previous date of inspection?	Yes	

### COMMENTS AND OTHER INFORMATION

#### Certification Statement:



I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself or under my direction and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability in accordance with the Utah R645 Coal Mining Rules.

By:  
Carl W. Winters, Engineering Manager

Signature *Carl W. Winters* Date: *12-21-07*

P.E. Number & State:  
*Utah 22-157958-2202*

<b>IMPOUNDMENT INSPECTION AND CERTIFIED REPORT</b>			
<b>Permit Number</b>	C/007/005	<b>Report Date</b>	December 11, 2007
<b>Mine Name</b>	Skyline Mines		
<b>Company Name</b>	Canyon Fuel Company		
<b>Impoundment Identification</b>	<b>Impoundment Name</b>	Waste Rock Site Sediment Pond	
	<b>Impoundment Number</b>	003	
	<b>UPDES Permit Number</b>	UT0023540	
	<b>MSHA ID Number</b>	NA	
<b>IMPOUNDMENT INSPECTION</b>			
<b>Inspection Date</b>	November 26, 2007		
<b>Inspected By</b>	Carl Winters / Gregg Galecki		
<b>Reason for Inspection</b> (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		Quarterly	
<p><b>1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.</b></p> <p>No instability, structural weakness or other hazardous condition was noted at the site during the quarterly pond site inspection.</p>			
<b>Required for an impoundment which functions as a SEDIMENTATION POND.</b>	<p><b>2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.</b></p> <p>Sediment Storage Capacity: 9939 ft<sup>3</sup>          60% Elevation: 7857.2 feet ASL (above sea level)          100% Elevation: 7858.1 ASL          Current Sediment Level Elevation: The pond was cleaned of sediment in August 2007. The pond was resurveyed to estimate the available sediment capacity following the cleaning. A bedrock shelf exists in the bottom of the pond, enabling portions of the pond to be deeper in areas where the shelf does not exist. No measurable amount of additional sediment was observed during the inspection.</p>		
	<p><b>3. Principle and emergency spillway elevations.</b></p> <p>Principal and Emergency Spillways Elevation: 7864.0 feet ASL (The outlet of Pond 003 serves as both the principal and emergency spillway).</p>		

4. **Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on outslopes of embankments, etc.

This pond did not discharge during the 4<sup>th</sup> quarter of 2007, therefore no water samples were obtained. The pond was dry at the time of the inspection. The out slopes of the pond embankment do not appear to present any type of hazardous conditions. No instability was noted in the pond embankment. The pond embankment is stabilized with native grasses. The pond was thoroughly cleaned in August 2007, and the capacity land surveyed. Based on the survey, the pond has a sediment capacity of approximately 9939 cu-ft.

Both the pond inlet and outlet were clear of debris. The pond decant pipe was clear. The valve on the decant pipe was checked to confirm it is functional.

The current sediment storage capacity is based on the 2007 survey. The perimeter footprint of the pond did not change during the cleaning project, only the depth of the pond was modified.

5. **Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

The pond was cleaned in August 2007. No changes or modifications from the cleaning have been noted in the geometry or perimeter footprint of the pond since the last inspection. After the August 2007 cleaning, the pond was resurveyed and determined to have approximately 9,939 ft<sup>3</sup> of sediment storage capacity. The pond was dry during the inspection. Precipitation during the quarter came in the form of snow – no water accumulations were noted. Not enough precipitation was encountered during the quarter to affect the stability or function of the pond.

**Qualification Statement**

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature: 

Date:

12/13/07

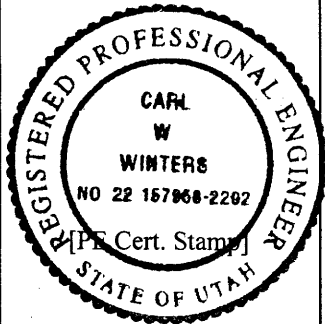
## CERTIFIED REPORT

IMPOUNDMENT EVALUATION (If NO, explain under Comments)	YES	NO
1. Is impoundment designed and constructed in accordance with the approved plan?	Yes	
2. Is impoundment free of instability, structural weakness, or any other hazardous condition?	Yes	
3. Has the impoundment met all applicable performance standards and effluent limitations from the previous date of inspection?	Yes	

### COMMENTS AND OTHER INFORMATION

The pond did not discharge in 2007. There have been no reports of discharge from the pond the 4<sup>th</sup> quarter 2007.

#### Certification Statement:



I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized in the State of Utah to inspect and certify the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself or under my direction and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability in accordance with the Utah R645 Coal Mining Rules.

By:

Carl W. Winters, Engineering Manager

Signature:

Date:

12/13/07

P.E. Number & State:

UTAH 22 157958-2202

<b>IMPOUNDMENT INSPECTION AND CERTIFIED REPORT</b>			
Permit Number	C/007/005	Report Date	October 10, 2007
Mine Name	Skyline Mines		
Company Name	Canyon Fuel Company		
Impoundment Identification	Impoundment Name	Mine Site Sediment Pond	
	Impoundment Number	001	
	UPDES Permit Number	UT0023540	
	MSHA ID Number	NA	
<b>IMPOUNDMENT INSPECTION</b>			
Inspection Date	September 21, 2007		
Inspected By	Gregg Galecki		
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		Quarterly	
<p><b>1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.</b></p> <p>No signs of instability were observed. No hazardous conditions were observed during the inspection of the pond.</p>			
Required for an impoundment which functions as a SEDIMENTATION POND.	<p><b>2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.</b></p> <p>Sediment Storage Capacity: 187,427ft<sup>3</sup> (based on 2005 survey and MRP as-built drawings)          60% Elevation: 8568.5 feet ASL (above sea level)          100% Elevation: 8571.5 feet ASL          The elevation of the sediment within the pond at the discharge point was approximately 8568.60 ft ASL, during the 3rd quarter inspection. At the time of the inspection, the pond is actively being drained to start a thorough removal of sediment from the pond.</p>		
	<p><b>3. Principle and emergency spillway elevations.</b></p> <p>Principal and Emergency Spillway Elevations: 8579.6 feet ASL (The outlet structure for Pond 001 serves as both the Principal and Emergency Spillways)          Total volume of pond at Spillway: 350,437 ft<sup>3</sup>          Required runoff storage: 163,010 ft<sup>3</sup>          100% Sediment storage: 187,427 ft<sup>3</sup>          60% Sediment storage: 112,456 ft<sup>3</sup></p>		



## IMPOUNDMENT INSPECTION AND CERTIFIED REPORT

4. **Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

No measureable water was in the pond during the inspection – the pond was being actively drained to prepare for sediment removal. The sediment pond has discharged intermittently during the quarter – and actively drained from mid-August through the quarter. A sample of the mine discharge water, including this pond's discharge, has been taken on weekly basis throughout the quarter as required by the mine's UPDES permit. On a biweekly basis the water sample is analyzed for total iron. The frequency of analysis for Total Phosphorus has been reduced from monthly to quarterly per DWQ direction. Weekly samples include oil and grease, total dissolved solids, total suspended solids, pH and conductivity.

Surface water is collected from the upper mine pad and discharged to the pond through a culvert located on the west end of the pond. The culvert is functioning as designed. A moderately sized delta has formed below the culvert. The outlet structure was working as designed and appears to be in good working condition.

A series of turbidity curtains are installed in the pond to help reduce the suspended load within the pond.

The pond is scheduled for a thorough clean out in October 2007.

5. **Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

The overall geometry of the pond does not appear to have been modified since the cleaning in June 2005, with the exception of a delta forming at the inlet. The survey indicated portions of the pond are slightly deeper than the as-built construction. The pond has discharged intermittently this quarter. The minimum water elevation has been 8568.60 – with no water in the pond this represents the sediment level. Water height over the lip of the discharge pipe has varied between 0.00 and 0.06 feet. Following the cleaning of the sediment from the pond in October 2007, a survey will be conducted to establish the available storage in the pond.

### Qualification Statement

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature:

*Brett A. Salch*

Date:

10/10/07

<b>IMPOUNDMENT INSPECTION AND CERTIFIED REPORT</b>			
Permit Number	C/007/005	Report Date	October 31, 2007
Mine Name	Skyline Mines		
Company Name	Canyon Fuel Company		
Impoundment Identification	Impoundment Name	Rail Loadout Sediment Pond	
	Impoundment Number	002	
	UPDES Permit Number	UT0023540	
	MSHA ID Number	NA	
<b>IMPOUNDMENT INSPECTION</b>			
Inspection Date	September 21, 2007		
Inspected By	Gregg Galecki		
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		Quarterly	
<p><b>1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.</b></p> <p>No instability of the embankment was noted during the inspection. No hazardous conditions were noted at the time of the inspection. The pond was completely empty and dry and a thorough inspection of the pond was conducted.</p>			
Required for an impoundment which functions as a SEDIMENTATION POND.	<p><b>2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.</b></p> <p>Sediment Storage Capacity: 22,963 ft<sup>3</sup>          60% Elevation: 7914.46 feet ASL (above sea level)          100% Elevation: 7915.40 ASL          The current elevation of the sediment within the pond at the discharge point was 6.40 ft below the water elevation, and no water was in the pond during the inspection, and the pond had been completely cleaned out.</p>		
	<p><b>3. Principle and emergency spillway elevations.</b></p> <p>Principle Spillway Elevation: 7919.7 feet ASL          Emergency Spillway Elevation: 7922 feet ASL          Total volume of pond at Spillway: 68,701 ft<sup>3</sup>          Required runoff storage: 45,738 ft<sup>3</sup>          100% Sediment Storage: 22,963 ft<sup>3</sup>          60% Sediment Storage: 13,778 ft<sup>3</sup></p>		

4. **Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

There was zero water in the pond at the time of the inspection. Depth to the bottom of the pond was 7,912.3 feet ASL, based on survey conducted on 9/23/07. The bottom of the pond unfortunately not where the pond is measured due to normal water depths. This is 7.4 feet below the spill point of the principal spillway.

The pond was not discharging at the time of the inspection. The pond did not discharge during the 3rd quarter 2007. The pond embankment appears stable and without noticeable erosion. The footprint of the pond remains unchanged. Stable grasses vegetate and stabilize the out slopes of the embankment.

The pond was completely drained and cleaned during the quarter. Based on the combination of the 2007 survey of the pond when it was empty relative to the elevation of the sediment from the 2<sup>nd</sup> quarter 2007 inspection, and calculating the amount of material moved to the Waste Rock site approximately 13,000 ft<sup>3</sup> of sediment was removed from the pond. Results of the 2007 survey also indicated the available sediment capacity is greater than it had been previously.

5. **Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

The geometry of the pond does not appear to have changed with the removing of sediment in September 2007. The sediment volume in the pond after sediment removal was estimated to be zero ft<sup>3</sup> with a remaining sediment storage capacity of 22,963 ft<sup>3</sup>. The volume calculations are based on a survey conducted in the Fall 2007 following the cleaning of the pond.

**Qualification Statement**

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature:

*Bug A. Salubin*

Date:

10/31/07

IMPOUNDMENT INSPECTION AND CERTIFIED REPORT			
Permit Number	C/007/005	Report Date	October 11, 2007
Mine Name	Skyline Mines		
Company Name	Canyon Fuel Company		
Impoundment Identification	Impoundment Name	Waste Rock Site Sediment Pond	
	Impoundment Number	003	
	UPDES Permit Number	UT0023540	
	MSHA ID Number	NA	
<b>IMPOUNDMENT INSPECTION</b>			
Inspection Date	September 21, 2007		
Inspected By	Gregg Galecki		
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		Quarterly	
<p><b>1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.</b></p> <p>No instability, structural weakness or other hazardous condition was noted at the site during the quarterly pond site inspection.</p>			
Required for an impoundment which functions as a SEDIMENTATION POND.	<p><b>2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.</b></p> <p>Sediment Storage Capacity: 9939 ft<sup>3</sup>          60% Elevation: 7857.2 feet ASL (above sea level)          100% Elevation: 7858.1 ASL          Current Sediment Level Elevation: The pond was cleaned of sediment in August 2007. The pond was resurveyed to estimate the available sediment capacity following the cleaning. A bedrock shelf exists in the bottom of the pond, enabling portions of the pond to be deeper in areas where the shelf does not exist.</p>		
	<p><b>3. Principle and emergency spillway elevations.</b></p> <p>Principal and Emergency Spillways Elevation: 7864.0 feet ASL (The outlet of Pond 003 serves as both the principal and emergency spillway).</p>		

4. **Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on outslopes of embankments, etc.

This pond did not discharge during the 3rd quarter of 2007, therefore no water samples were obtained. The pond was dry at the time of the inspection. The out slopes of the pond embankment do not appear to present any type of hazardous conditions. No instability was noted in the pond embankment. The pond embankment is stabilized with native grasses. The pond was thoroughly cleaned in August 2007, and the capacity re-surveyed based on depth changes occurring during cleaning. The current sediment storage capacity is based on the 2007 survey. The perimeter footprint of the pond did not change during the cleaning project, only the depth of the pond was modified.

5. **Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

The pond was cleaned in August 2007. No changes have been noted in the geometry or perimeter footprint of the pond since the last inspection due to the cleaning. After the August 2007 cleaning, the pond was resurveyed and determined to have approximately 9,939 ft<sup>3</sup> of sediment storage capacity.

**Qualification Statement**

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature: Gregory A. Saluchi Date: 10/11/07

IMPOUNDMENT INSPECTION AND CERTIFIED REPORT			
Permit Number	C/007/005	Report Date	July 5, 2007
Mine Name	Skyline Mines		
Company Name	Canyon Fuel Company		
Impoundment Identification	Impoundment Name	Mine Site Sediment Pond	
	Impoundment Number	001	
	UPDES Permit Number	UT0023540	
	MSHA ID Number	NA	
<b>IMPOUNDMENT INSPECTION</b>			
Inspection Date	June 13, 2007		
Inspected By	Gregg Galecki		
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		Quarterly	
<p><b>1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.</b></p> <p>No signs of instability were observed. No hazardous conditions were observed during the inspection of the pond.</p>			
Required for an impoundment which functions as a SEDIMENTATION POND.	<p><b>2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.</b></p> <p>Sediment Storage Capacity: 187,427ft<sup>3</sup> (based on 2005 survey and MRP as-built drawings)          60% Elevation: 8568.5 feet ASL (above sea level) 8571.26          100% Elevation: 8571.5 feet ASL 8572.61          The elevation of the sediment within the pond at the discharge point was approximately 8569.60 ft ASL, during the 2nd quarter inspection. Although the volume has not apparently changed significantly since the 2<sup>nd</sup> quarter 2005, turbidity curtains installed in the pond capture a majority of the material in the upper 1/3 of the pond. A moderately sized delta is forming at the inlet of the pond. The pond is scheduled for a cleaning in August 2007.</p>		
	<p><b>3. Principle and emergency spillway elevations.</b></p> <p>Principal and Emergency Spillway Elevations: 8579.6 feet ASL (The outlet structure for Pond 001 serves as both the Principal and Emergency Spillways)          Total volume of pond at Spillway: 350,437 ft<sup>3</sup>          Required runoff storage: 163,010 ft<sup>3</sup>          100% Sediment storage: 187,427 ft<sup>3</sup>          60% Sediment storage: 112,456 ft<sup>3</sup></p>		



## IMPOUNDMENT INSPECTION AND CERTIFIED REPORT

- 4. Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

Water elevation at the time of inspection was 8579.60 feet ASL with zero water discharging. The sediment pond has discharged intermittently during the quarter. A sample of the mine discharge water, including this pond's discharge, has been taken on weekly basis throughout the quarter as required by the mine's UPDES permit. On a biweekly basis the water sample is analyzed for total iron. The frequency of analysis for Total Phosphorus has been reduced from monthly to quarterly per DWQ direction. Weekly samples include oil and grease, total dissolved solids, total suspended solids, pH and conductivity.

Surface water is collected from the upper mine pad and discharged to the pond through a culvert located on the west end of the pond. The culvert is functioning as designed. A moderately sized delta has formed below the culvert. The outlet structure was working as designed and appears to be in good working condition.

A series of turbidity curtains are installed in the pond to help reduce the suspended load within the pond.

The pond is scheduled for clean out in August 2007.

- 5. Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

The overall geometry of the pond does not appear to have been modified since the cleaning in June 2005, with the exception of a delta forming at the inlet. The survey indicated portions of the pond are slightly deeper than the as-built construction. The pond has discharged intermittently this quarter. The minimum water elevation has been 8579.59 – at zero discharge. Water height over the lip of the discharge pipe has varied between 0.00 and 0.07 feet. The survey indicated the total storage volume for water and sediment combined is approximately 350,437 ft<sup>3</sup> (8.0 ac-ft).

Based on the estimated volume of sediment removed in June 2005, approximately an additional 80,000ft<sup>3</sup> volume is available for sediment storage while still maintaining the required volume for water storage.

### Qualification Statement

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature:

*Greg A. Scholz*

Date:

7/5/07

<b>IMPOUNDMENT INSPECTION AND CERTIFIED REPORT</b>			
<b>Permit Number</b>	C/007/005	<b>Report Date</b>	July 5, 2007
<b>Mine Name</b>	Skyline Mines		
<b>Company Name</b>	Canyon Fuel Company		
<b>Impoundment Identification</b>	<b>Impoundment Name</b>	Waste Rock Site Sediment Pond	
	<b>Impoundment Number</b>	003	
	<b>UPDES Permit Number</b>	UT0023540	
	<b>MSHA ID Number</b>	NA	
<b>IMPOUNDMENT INSPECTION</b>			
<b>Inspection Date</b>	June 11, 2007		
<b>Inspected By</b>	Gregg Galecki		
<b>Reason for Inspection</b> (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		Quarterly	
<p><b>1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.</b></p> <p>No instability was noted at the site during the quarterly pond site inspection.</p>			
<b>Required for an impoundment which functions as a SEDIMENTATION POND.</b>	<p><b>2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.</b></p> <p>Sediment Storage Capacity: 6906 ft<sup>3</sup>          60% Elevation: 7860.8 feet ASL (above sea level)          100% Elevation: 7861.3 ASL          Current Sediment Level Elevation: The pond was last cleaned of sediment in July of 2004. A delta has formed at the inlet due to activity at the site since Summer 2006. At the time of the 2nd quarter inspection, the pond had no on the floor of the pond.</p>		
	<p><b>3. Principle and emergency spillway elevations.</b></p> <p>Principal and Emergency Spillways Elevation: 7865.5 feet ASL (The outlet of Pond 003 serves as both the principal and emergency spillway).</p>		

4. **Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

This pond did not discharge during the 2nd quarter of 2007, therefore no water samples were obtained. The pond was dry at the time of the inspection. The out slopes of the pond embankment do not appear to present any type of hazardous conditions. No instability was noted in the pond embankment. The pond embankment is stabilized with native grasses.

5. **Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

No changes have been noted in the geometry of the pond since the last inspection. The pond appears to have at least 70% of its sediment storage capacity remaining. A delta of sediment has formed at the inlet of the pond.

**Qualification Statement**

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature: Beggs A. Salcedo Date: 7/5/07

<b>IMPOUNDMENT INSPECTION AND CERTIFIED REPORT</b>			
<b>Permit Number</b>	C/007/005	<b>Report Date</b>	July 5, 2007
<b>Mine Name</b>	Skyline Mines		
<b>Company Name</b>	Canyon Fuel Company		
<b>Impoundment Identification</b>	<b>Impoundment Name</b>	Rail Loadout Sediment Pond	
	<b>Impoundment Number</b>	002	
	<b>UPDES Permit Number</b>	UT0023540	
	<b>MSHA ID Number</b>	NA	
<b>IMPOUNDMENT INSPECTION</b>			
<b>Inspection Date</b>	June 13, 2007		
<b>Inspected By</b>	Gregg Galecki		
<b>Reason for Inspection</b> (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		Quarterly	
<p><b>1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.</b></p> <p>No instability of the embankment was noted during the inspection. No hazardous conditions were noted at the time of the inspection.</p>			
<b>Required for an impoundment which functions as a SEDIMENTATION POND.</b>	<p><b>2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.</b></p> <p>Sediment Storage Capacity: 13,624 ft<sup>3</sup>          60% Elevation: 7915.0 feet ASL (above sea level)          100% Elevation: 7915.6 ASL          The current elevation of the sediment within the pond at the discharge point was 1.78 ft below the water elevation, and the water elevation was 2.65 ft below the spillway during the inspection.</p>		
	<p><b>3. Principle and emergency spillway elevations.</b></p> <p>Principle Spillway Elevation: 7919.7 feet ASL          Emergency Spillway Elevation: 7922 feet ASL          Total volume of pond at Spillway: 59,362 ft<sup>3</sup>          Required runoff storage: 45,738 ft<sup>3</sup>          100% Sediment Storage: 13,624 ft<sup>3</sup>          60% Sediment Storage: 8,174 ft<sup>3</sup></p>		

4. **Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on outslopes of embankments, etc.

Current water surface elevation was 7,917.05 feet ASL, 2.65 feet below the spill point of the principal spillway.

The pond was not discharging at the time of the inspection. The pond did not discharge during the 2nd quarter 2007. The pond embankment appears stable and without noticeable erosion. Minor to moderate delta of sediment is forming at the inlet. The footprint of the pond remains unchanged. Stable grasses vegetate and stabilize the outslopes of the embankment.

5. **Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

The geometry of the pond does not appear to have changed with the removing of sediment in June 2005. The sediment volume in the pond after sediment removal was estimated to be 10,527 ft<sup>3</sup> with a remaining sediment storage capacity of 3,097 ft<sup>3</sup>. The volume calculations are based on a survey conducted in the Fall 2005.

A delta has formed at the inlet of the pond. The pond is scheduled for cleaning in August 2007.

**Qualification Statement**

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature: Buggh A. Salahi Date: 7/5/07

IMPOUNDMENT INSPECTION AND CERTIFIED REPORT				
Permit Number	C/007/005	Report Date	March 15, 2007	
Mine Name	Skyline Mines			
Company Name	Canyon Fuel Company			
Impoundment Identification	Impoundment Name	Mine Site Sediment Pond		
	Impoundment Number	001		
	UPDES Permit Number	UT0023540		
	MSHA ID Number	NA		
<b>IMPOUNDMENT INSPECTION</b>				
Inspection Date	March 6, 2007			
Inspected By	Gregg Galecki			
Reason for Inspection (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		Quarterly		
<p><b>1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.</b></p> <p>No signs of instability were observed. No hazardous conditions were observed during the inspection of the pond.</p>				
Required for an impoundment which functions as a SEDIMENTATION POND.	<p><b>2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.</b></p> <p>Sediment Storage Capacity: 187,427ft<sup>3</sup> (based on 2005 survey and MRP as-built drawings)  64% Elevation: 8568.0 feet ASL (above sea level)  100% Elevation: 8571.0 feet ASL  The elevation of the sediment within the pond at the discharge point was approximately 8569.60 ft ASL, during the 4<sup>th</sup> quarter inspection. The pond has been frozen most of the 1<sup>st</sup> quarter and no sediment elevation was taken. Although the volume has not apparently changed significantly since the 2<sup>nd</sup> quarter 2005, approximately 1,057 tons of sediment was removed from the pond in June 2005. Turbidity curtains installed in the pond capture a majority of the material in the upper 1/3 of the pond. A moderately sized delta is forming at the inlet of the pond.</p>			
	<p><b>3. Principle and emergency spillway elevations.</b></p> <p>Principal and Emergency Spillway Elevations: 8579.6 feet ASL (The outlet structure for Pond 001 serves as both the Principal and Emergency Spillways)  Total volume of pond at Spillway: 350,437 ft<sup>3</sup>  Required runoff storage: 163,010 ft<sup>3</sup>  100% Sediment storage: 187,427 ft<sup>3</sup>  60% Sediment storage: 112,456 ft<sup>3</sup></p>			

## IMPOUNDMENT INSPECTION AND CERTIFIED REPORT

- 4. Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

Water elevation at the time of inspection was 8579.59 feet ASL with zero water discharging. The sediment pond has discharged intermittently during the quarter. A sample of the mine discharge water, including this pond's discharge, has been taken on weekly basis throughout the quarter as required by the mine's UPDES permit. On a biweekly basis the water sample is analyzed for total iron; total phosphorus is analyzed once a month. Weekly samples include oil and grease, total dissolved solids, total suspended solids, pH and conductivity.

Surface water is collected from the upper mine pad and discharged to the pond through a culvert located on the west end of the pond. The culvert appears to be functioning as designed. A moderately sized delta is beginning to form below the culvert. The outlet structure was working as designed and appears to be in good working condition.

A series of turbidity curtains are installed in the pond to help reduce the suspended load within the pond.

The pond is scheduled for clean out in 2007.

- 5. Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

The overall geometry of the pond does not appear to have been modified since the cleaning in June 2005. The survey indicated portions of the pond are slightly deeper than the as-built construction. The pond has discharged intermittently this quarter. The minimum water elevation has been 8579.59 – at zero discharge. Water height over the lip of the discharge pipe has varied between 0.00 and 0.10 feet. The survey indicated the total storage volume for water and sediment combined is approximately 350,437 ft<sup>3</sup> (8.0 ac-ft).

Based on the estimated volume of sediment removed in June 2005, approximately an additional 80,000ft<sup>3</sup> volume is available for sediment storage while still maintaining the required volume for water storage.

### Qualification Statement

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature:

*Suey A. Buluh* Date: 3/15/07



<b>IMPOUNDMENT INSPECTION AND CERTIFIED REPORT</b>			
<b>Permit Number</b>	C/007/005	<b>Report Date</b>	March 15, 2007
<b>Mine Name</b>	Skyline Mines		
<b>Company Name</b>	Canyon Fuel Company		
<b>Impoundment Identification</b>	<b>Impoundment Name</b>	Rail Loadout Sediment Pond	
	<b>Impoundment Number</b>	002	
	<b>UPDES Permit Number</b>	UT0023540	
	<b>MSHA ID Number</b>	NA	
<b>IMPOUNDMENT INSPECTION</b>			
<b>Inspection Date</b>	March 6, 2007		
<b>Inspected By</b>	Gregg Galecki		
<b>Reason for Inspection</b> (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		Quarterly	
<p><b>1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.</b></p> <p>No instability of the embankment was noted during the inspection. No hazardous conditions were noted at the time of the inspection.</p>			
<b>Required for an impoundment which functions as a SEDIMENTATION POND.</b>	<p><b>2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.</b></p> <p>Sediment Storage Capacity: 13,624 ft<sup>3</sup>          60% Elevation: 7915.0 feet ASL (above sea level)          100% Elevation: 7915.6 ASL          The current elevation of the sediment within the pond at the discharge point was not measured during the inspection. Thick ice prohibited accurately measuring the depth. Height of the ice was 0.45 feet below the discharge point.</p>		
	<p><b>3. Principle and emergency spillway elevations.</b></p> <p>Principle Spillway Elevation: 7919.7 feet ASL          Emergency Spillway Elevation: 7922 feet ASL          Total volume of pond at Spillway: 59,362 ft<sup>3</sup>          Required runoff storage: 45,738 ft<sup>3</sup>          100% Sediment Storage: 13,624 ft<sup>3</sup>          60% Sediment Storage: 8,174 ft<sup>3</sup></p>		

4. **Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

Current water/ice surface elevation was 7,919.25 feet ASL, 0.45 feet below the spill point of the principal spillway.

The pond was not discharging at the time of the inspection. The pond did not discharge during the 1st quarter 2007. The pond embankment appears stable and without noticeable erosion. Minor to moderate delta of sediment is on top of ice at inlet. The footprint of the pond remains unchanged. Stable (currently dormant) grasses vegetate and stabilize the out slopes of the embankment.

5. **Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

The geometry of the pond does not appear to have changed with the removing of sediment in June 2005. The sediment volume in the pond after sediment removal was estimated to be 10,527 ft<sup>3</sup> with a remaining sediment storage capacity of 3,097 ft<sup>3</sup>. The volume calculations are based on a survey conducted in the Fall 2005.

A minor delta has formed at the inlet of the pond. The pond is scheduled for cleaning in 2007.

**Qualification Statement**

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature:

*Buzz A. Salehi*

Date: 3/15/07

<b>IMPOUNDMENT INSPECTION AND CERTIFIED REPORT</b>			
<b>Permit Number</b>	C/007/005	<b>Report Date</b>	March 15, 2007
<b>Mine Name</b>	Skyline Mines		
<b>Company Name</b>	Canyon Fuel Company		
<b>Impoundment Identification</b>	<b>Impoundment Name</b>	Waste Rock Site Sediment Pond	
	<b>Impoundment Number</b>	003	
	<b>UPDES Permit Number</b>	UT0023540	
	<b>MSHA ID Number</b>	NA	
<b>IMPOUNDMENT INSPECTION</b>			
<b>Inspection Date</b>	March 15, 2007		
<b>Inspected By</b>	Gregg Galecki		
<b>Reason for Inspection</b> (Annual, Quarterly or Other Periodic Inspection, Critical Installation, or Completion of Construction)		Quarterly	
<p><b>1. Describe any appearance of any instability, structural weakness, or any other hazardous condition.</b></p> <p>No instability was noted at the site during the quarterly pond site inspection.</p>			
<b>Required for an impoundment which functions as a SEDIMENTATION POND.</b>	<p><b>2. Sediment storage capacity, including elevation of 60% and 100% sediment storage volumes, and, estimated average elevation of existing sediment.</b></p> <p>Sediment Storage Capacity: 6906 ft<sup>3</sup>          60% Elevation: 7860.8 feet ASL (above sea level)          100% Elevation: 7861.3 ASL          Current Sediment Level Elevation: The pond was last cleaned of sediment in July of 2004. Moderate sediment has been deposited during the quarter due to recent activity at the Waste Rock site. At the time of the 1st quarter inspection, the pond had minor to moderate amounts of water covering approximately 70 percent of the pond floor.</p>		
	<p><b>3. Principle and emergency spillway elevations.</b></p> <p>Principal and Emergency Spillways Elevation: 7865.5 feet ASL (The outlet of Pond 003 serves as both the principal and emergency spillway).</p>		

4. **Field Information.** Provide current water elevation, whether pond is discharging, type and number of samples taken, monitoring/instrumentation information, inlet/outlet conditions, or other related activities associated with the pond including but not limited to sediment cleanout, pond decanting, embankment erosion/repairs, monitoring information, vegetation on out slopes of embankments, etc.

This pond did not discharge during the 1st quarter of 2007, therefore no water samples were obtained. The pond had puddles in the bottom at the time of the inspection. The out slopes of the pond embankment do not appear to present any type of hazardous conditions. No instability was noted in the pond embankment. The pond embankment is stabilized with native grasses (currently dormant).

5. **Field Evaluation.** Describe any changes in the geometry of the impounding structure, average and maximum depths and elevations of impounded water, estimated sediment or slurry volume and remaining storage capacity, estimated volume of water impounded, and any other aspect of the impounding structure affecting its stability or function which has occurred during the reporting period.

No changes have been noted in the geometry of the pond since the last inspection. The pond appears to have at least 80% of its sediment storage capacity remaining. The estimated volume of water in the pond at the time of the inspection was less than 0.3 acre-feet. A small delta of sediment has formed at the inlet of the pond.

**Qualification Statement**

I hereby certify that; I am experienced in the construction of impoundments; I am qualified and authorized under the direction of a Registered Professional Engineer to inspect the condition and appearance of impoundments in accordance with the certified and approved designs for this structure; that the impoundment has been maintained in accordance with approved design and meet or exceed the minimum design requirements under all applicable federal, state and local regulations; and, that inspections and inspection reports are made by myself and include any appearances of instability, structural weakness or other hazardous conditions of the structure affecting stability.

Signature:

*Brett A. Baluchi* Date: 3/15/07

**Laboratory Analysis – Rock Samples**

**Waste Rock Samples**  
**WR-001-07 through WR-003-007**

**Sediment Pond Slurry Samples**  
**SPS-001-07**



Inter-Mountain Laboratories, Inc.  
1673 Terra Avenue, Sheridan, Wyoming 82801

(307) 672-8945

### Soil Analysis Report

Canyon Fuel Company, LLC.

HCR 35, Box 380

Helper, UT 844526

Report ID: S0707206001

Date: 7/31/2007

Work Order: S0707206

Project: Skyline Utah#6

Date Received: 7/13/2007

Lab ID	Sample ID	pH		Electrical		Field		Witt		Calcium		Magnesium		Sodium		Potassium		SAR
		s.u.	%	Conductivity	dS/m	Capacity	%	Point	%	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	
S0707206-001	WR-001-07	7.5	41.1	3.89		13		8.3		19.8		18.1		11.0		2.04		2.52
S0707206-002	WR-002-07	7.5	39.2	4.42		14		7.0		20.3		21.5		14.1		2.28		3.09
S0707206-003	WR-003-07	7.4	39.4	3.60		16		7.5		19.4		16.3		9.14		1.88		2.16

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2O Sol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by

*Karen A Secor*

Karen Secor, Soil Lab Supervisor



INTER-MOUNTAIN LABS

Inter-Mountain Laboratories, Inc.  
1673 Terra Avenue, Sheridan, Wyoming 82801

(307) 672-8945

### Soil Analysis Report

Canyon Fuel Company, LLC.

HCR 35, Box 380

Helper, UT 84526

Report ID: S0707206001

Project: Skyline Utah#6

Date Received: 7/13/2007

Date: 7/31/2007

Work Order: S0707206

Lab ID	Sample ID	Available		Exchangeable		Sand	Silt	Clay	Texture	Coarse	
		Sodium	meq/100g	Sodium	meq/100g					Fragment	%
S0707206-001	WR-001-07	0.82		0.37		85.0	10.0	5.0	Loamy Sand	38.6	
S0707206-002	WR-002-07	0.90		0.35		82.0	14.0	4.0	Loamy Sand	31.5	
S0707206-003	WR-003-07	0.68		0.32		83.0	14.0	3.0	Loamy Sand	32.5	

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2Osol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S. = Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot= Neutralization Potential

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by:

Shen A. Secor, Soil Lab Supervisor



INTER-MOUNTAIN LABS

Inter-Mountain Laboratories, Inc.  
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### Soil Analysis Report

Canyon Fuel Company, LLC.

HCR 35, Box 380  
Helper, UT 84526

Project: Skyline Utah#6

Date Received: 7/13/2007

Report ID: S0707206001

Date: 7/31/2007

Work Order: S0707206

Lab ID	Sample ID	Boron		Nitrogen		Total		T.S.		Neut.		T.S.		Total	
		ppm	TKN %	Nitrate ppm	Selenium ppm	Sulfur %	AB	ABP	ABP	Pot. v/1000t	Pot. v/1000t	ABP v/1000t	ABP v/1000t	Carbon %	TOC %
S0707206-001	WR-001-07	0.46	0.67	1.08	<0.02	0.49	15.4	53.5	38.1	52.8	52.1				
S0707206-002	WR-002-07	0.61	0.87	<0.02	<0.02	0.68	21.1	57.6	36.5	57.8	57.1				
S0707206-003	WR-003-07	0.52	0.92	0.10	<0.02	0.56	17.5	50.2	32.7	58.1	57.5				

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2Osol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyRS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A. Secor

Karen Secor, Soil Lab Supervisor



### Soil Analysis Report

Canyon Fuel Company, LLC.

HCR 35, Box 380  
Helper, UT 84526

Report ID: S0806071001

Project: Skyline Utah#6

Date Reported: 6/23/2008

Date Received: 6/4/2008

Work Order: S0806071

Lab ID	Sample ID	Electrical		Field		Wilt		Calcium		Magnesium		Sodium		Potassium		SAR
		pH	Saturation	Conductivity	Capacity	Point	%	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	meq/L	
S0806071-001	SPS-001-07	8.0	52.8	0.70	17	5.7		2.09	1.76	2.18	0.14	1.57				
S0806071-002	WR-001-08	8.1	45.7	0.67	16	6.1		1.82	2.01	2.28	0.17	1.65				
S0806071-003	WR-002-08	8.1	55.5	0.60	13	6.3		1.50	1.43	2.20	0.13	1.81				

These results apply only to the samples tested.

Abbreviations for extractants: PE = Saturated Paste Extract, H2OSol = water soluble, AB-DTPA = Ammonium Bicarbonate-DTPA, AAO = Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S. = Total Sulfur, AB = Acid Base, ABP = Acid Base Potential, PysS = Pyritic Sulfur, Pyr+Org = Pyritic Sulfur + Organic Sulfur, Neutral. Pot = Neutralization Potential

Miscellaneous Abbreviations: SAR = Sodium Adsorption Ratio, CEC = Cation Exchange Capacity, ESP = Exchangeable Sodium Percentage

Reviewed by: Karen A. Secor

Karen Secor, Soil Lab Supervisor



Soil Analysis Report

Canyon Fuel Company, LLC.

HCR 35, Box 380  
Helper, UT 84526

Report ID: S0806071001

Project: Skyline Utah#6

Date Received: 6/4/2008

Date Reported: 6/23/2008

Work Order: S0806071

Lab ID	Sample ID	Sand	Silt	Clay	Texture	Coarse Fragment	Available Sodium	Exchangeable Sodium
		%	%	%		%	meq/100g	meq/100g
S0806071-001	SPS-001-07	72.0	27.0	1.0	Loamy Sand	13.1	0.60	0.48
S0806071-002	WR-001-08	72.0	26.0	2.0	Loamy Sand	68.4	0.51	0.41
S0806071-003	WR-002-08	28.0	71.0	1.0	Silty Loam	78.1	0.58	0.46

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2Oso= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot= Neutralization Potential

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A. Secor

Karen Secor, Soil Lab Supervisor



**Soil Analysis Report**  
**Canyon Fuel Company, LLC.**

Report ID: S0806071001

HCR 35, Box 380  
Helper, UT 84526

Project: Skyline Utah#6  
Date Received: 6/4/2008

Date Reported: 6/23/2008  
Work Order: S0806071

Lab ID	Sample ID	Nitrogen			Total	T.S.	Neut.	T.S.	Total	TOC	
		TKN	Nitrate	Boron	Selenium	Sulfur	AB	Pot.	ABP		Carbon
						%	ppm	ppm	%		1/1000t
S0806071-001	SPS-001-07	0.74	0.48	0.36	<0.02	0.44	13.7	43.5	29.8	70.6	70.1
S0806071-002	WR-001-08	0.79	0.14	0.38	<0.02	0.39	12.2	34.7	22.5	59.1	58.7
S0806071-003	WR-002-08	0.86	0.08	0.34	<0.02	0.47	14.5	25.1	10.6	64.8	64.5

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate  
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential  
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor  
Karen Secor, Soil Lab Supervisor

## APPENDIX B

### Reporting of Technical Data

Including monitoring data, reports, maps, and other information  
As required under the approved plan or as required by the Division

In accordance with the requirement of R645-310-130 and R645-301-140

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2007 Vegetation Report

Riparian Plant Communities, Section 1, Winter Quarters Canyon – Mt. Nebo Scientific

Riparian Plant Community, Monitoring Report for Selected Reaches in Winter Quarters Canyon, 2007 – Mt. Nebo Scientific

Cumulative Subsidence 1982 – 2007 Monitoring Map

Skyline Mine, Mine 3 – Levels 2 and 3 As Mined 2007 - **Confidential**

Skyline Mine, Mine 3 – Levels 2 and 3 Projected Mining March 2008-2012 - **Confidential**



Canyon Fuel  
Company, LLC.  
Skyline Mine

A Subsidiary of Arch Western Bituminous Group, LLC

Gregg Galecki, Environmental Coord.  
HCR 35, Box 380  
Helper, UT 84526  
(435) 448-2636 - Office  
(435) 448-2632 - Fax

## 2007 Vegetation Report for Skyline Mine

The following seedlings were purchased from the Lone Peak Nursery in Draper Utah:

- Western Thimbleberry,
- Oak Leaf Sumac
- Gambel Oak

The seedlings were planted in June 2007 along the conveyor bench just west of the former vegetative test plot. The plants were grown from seeds collected from plants in Utah and Colorado at elevations similar to the mine site. Precipitation for Summer 2007 helped the growth potential with 110 percent of normal precipitation accumulating June-September. Estimated seasonal mortality could not be assessed in Spring 2008 as the plants were still dormant at the time of this report due to the combination of significant snowpack and cool temperatures.

The following plants have been ordered for the spring of 2008: Antelope Bitter Brush, Basin Big Sage, and Rubber Rabbit Brush. These plants, provided the crop survives, will be planted in May or June 2008, again in the former test plot area of the conveyor bench.

**Riparian Plant Communities  
Section 1  
Winter Quarters Canyon**

**A Preliminary Survey: 2007**



*Prepared by*

**MT. NEBO SCIENTIFIC, INC.**

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Springville, Utah 84663  
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Patrick D. Collins, Ph.D.

*for*

**CANYON FUEL COMPANY, LLC.**

Skyline Mines  
HC 35 Box 380  
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April 2008

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# Introduction

## Study Objectives

The purpose of this report is to provide the results from fieldwork conducted in **Section 1**, Township 13 South, Range 6 East of Winter Quarters Canyon. Qualitative data were recorded to provide a preliminary assessment of two drainages and any riparian plant communities that were found to be supported in them.

## The Study Areas

Winter Quarters Canyon is located within the Wasatch Plateau, a high plateau that lies between the Colorado Plateau and Great Basin regions of western United States. The canyon is located about 3 miles west of the town of Scofield, Carbon County, Utah. The study areas of Winter Quarters Canyon were located near the eastern boundary line just outside the Manti-La Sal National Forest. Geologically, most of the area is Cretaceous in age with formations present that include the Price River, North Horn, and Blackhawk formations. The dominant plant communities in the general area were riparian, spruce-fir, aspen/grass, sagebrush/grass and mountain herblands. More specifically, the Section 1 study areas were located in two tributary drainages on the south side of Winter Quarters Creek. Therefore, the drainages and surface waters, when present, run in a south to north direction. For the purpose of this study, differentiation between the two drainages have been made by calling them the "East" and "West" Drainage of Section 1 (see included map called

*Study Areas in Section 1, Winter Quarters Canyon, 2007).*

## **Methods**

The drainages in this study were surveyed on September 4, 2007. The qualitative data recorded in the survey were exposures, presence (or absence) of surface water, dominate plant species observed, photographs, remarks about the riparian habitats, channel characteristics, applicable GPS coordinates and other field notes.

## **Results**

### East Drainage

Recording of field data began in the location where water from the east drainage entered a culvert and proceeded under the dirt road to its confluence with Winter Quarters Creek (map point E-1). There was surface water present from map points E-1 to E-2. The water flowed through a series of wet meadows that were adjacent to the small creek. The meadows ranged between 5 ft to 50 ft in width, but averaged about 18 ft. The dominant plant species in these wet meadows were primarily redtop (*Agrostis stolonifera*), and to a lesser extent marsh buttercup (*Ranunculus cymbalaria*) and Hood's sedge (*Carex hoodii*). A spring was present at map point E-2 and was evidently the source for the majority of the creek flow observed (see photographs).

Continuing up the channel, no surface water was observed between map points E-2 and E-3 (see

photographs). The drainage between these points supported more mesic-type plant species such as western coneflower (*Rudbeckia occidentalis*), wild geranium (*Geranium richardsonii*) and aspen (*Populus tremuloides*) trees (see photographs). Accordingly, the drainage between these points did not support well-defined riparian habitats such as those described above.

Drainage bottoms between map points E-3 and E-4 were similar to the previous reaches in that they also supported mesic species such as western coneflower, wild geranium and stinging nettle (*Urtica dioica*), but more upland species were also common including groundsel (*Senecio multilobatus*) and mountain brome (*Bromus carinatus*).

As a side note, this drainage and the plant communities in and around it, have been influenced by historical logging activities.

#### West Drainage

The West Drainage has also been severely impacted by past and current activities such as logging, grazing, and development of earthen dams created for livestock water. Aspen trees were cut and placed in large piles, possibly as a means to harvest the conifer trees for lumber. Fallen trees remain in the riparian zones in many places (see photographs).

Data and notes for the West Drainage began at map point W-1 near its confluence with Winter Quarters Creek (see map & photograph). Surface water was present between map point W-1 and

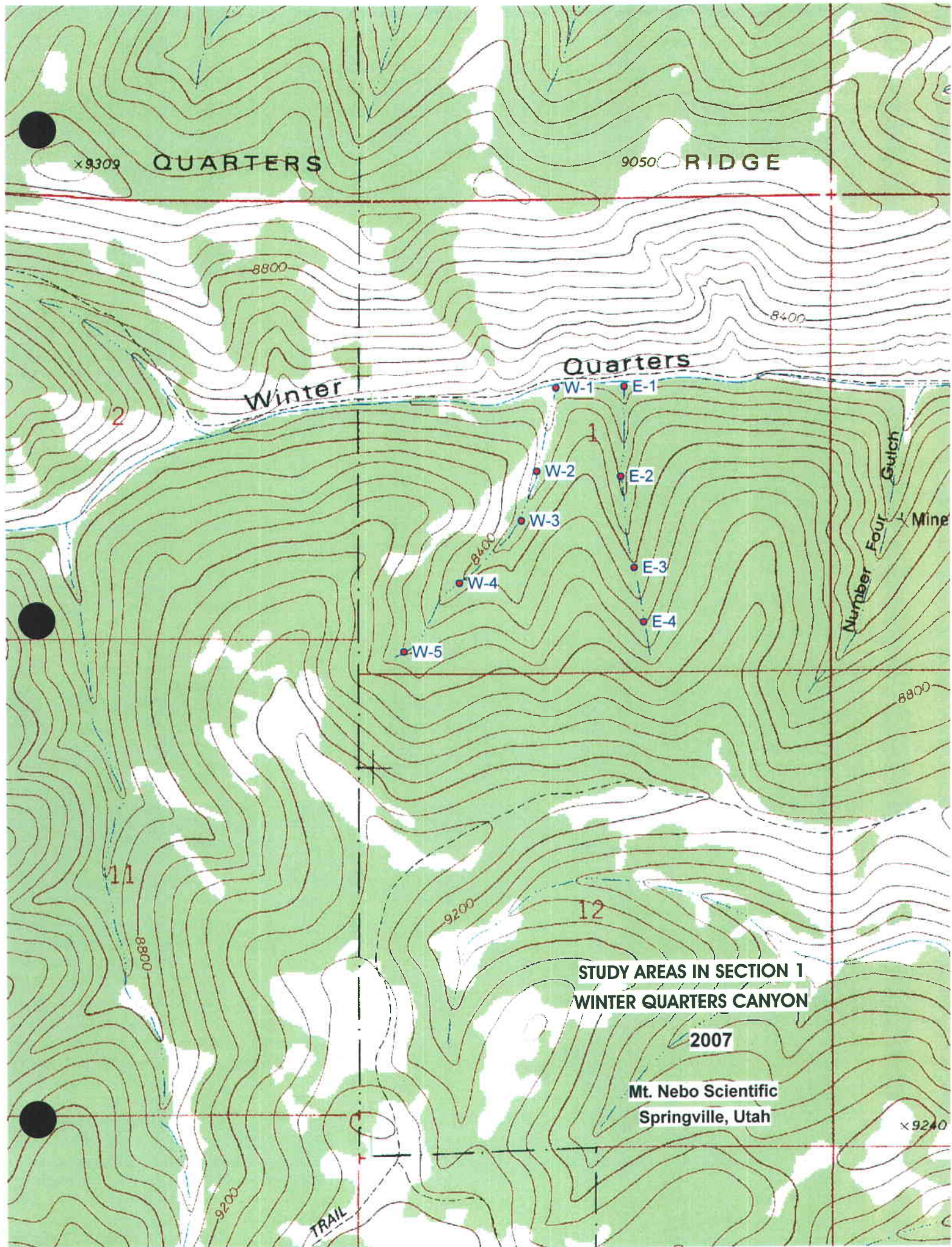
W-4. A spring was present at map point W-4. As can be observed in the photographs and the map contour lines, the channel changed from U-shaped in the lower reaches to V-shaped in the upper reaches of the map points. In the lower reaches where the U-shaped channel was common, the riparian habitats were wider, reaching widths of approximately 35 ft. Because these riparian corridors were wider, slopes were gentle, more productive and accessible to both domestic animals and wildlife that appeared to concentrate in these areas. Consequently, signs of overgrazing was evident by the plants present such as stinging nettle, dandelion (*Taraxacum officinale*) and musk thistle (*Carduus nutans*) that dominated in these areas. In the upper reaches where the stream was more confined, the riparian zones were closer to 1-2 ft in width. These riparian communities supported plant species such as redtop, marsh buttercup and monkey-flower (*Mimulus guttatus*).

As mentioned a spring was present at map point W-4. The channel above this point was V-shaped and no surface water or riparian communities were observed between map points W-4 and W-5.

### **Summary**

The "East" and "West" Drainages in Section 1 of Winter Quarters Canyon were studied to conduct a preliminary assessment for potential riparian habitat. Riparian plant communities were located between E-1 and E-2 of the East drainage and between W-1 and W-4 of the West drainage (see map called *Study Areas in Section 1*). Springs, or the sources for much of the surface flows in each drainage were located at map points E-1 and W-4 for the East and West drainages, respectively.









E-1 (down-drainage)



E-1 (up-drainage)



E-2 (down-drainage)



E-2 (up-drainage)





E-3 (down-drainage)



E-3 (up-drainage)





E-4 (down-drainage)

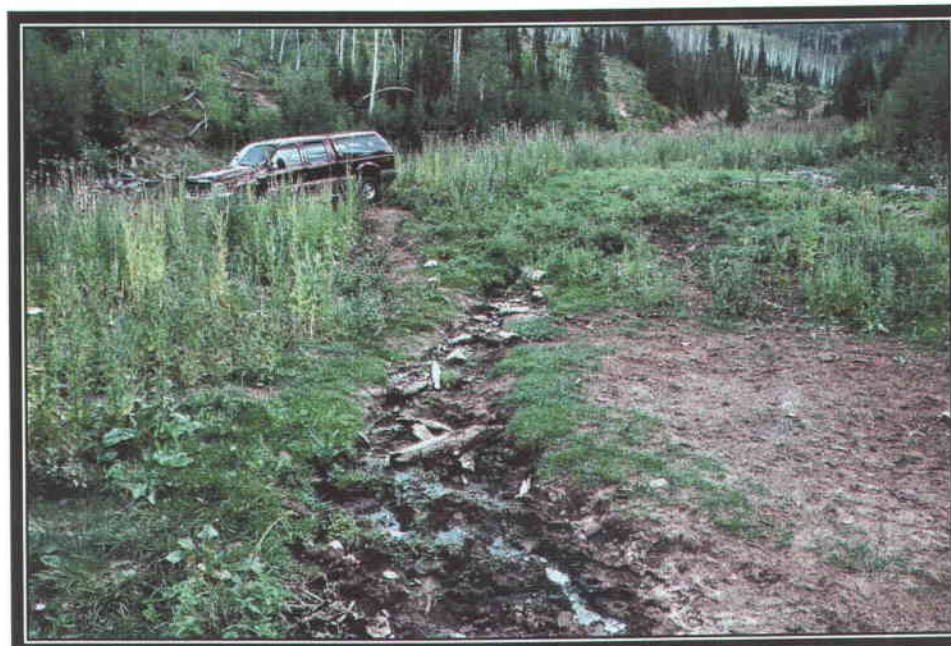


E-4 (up-drainage)





W-1 (down-drainage)



W-1 (up-drainage)



W-2 (down-drainage)



W-2 (up-drainage)





W-3 (down-drainage)



W-3 (up-drainage)



W-4 (down-drainage)



W-4 (up-drainage)





W-5 (general area)

*Riparian Plant Community  
Monitoring Report  
for  
Selected Reaches in  
Winter Quarters Canyon  
2007*



*Prepared by*

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April 2008



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## Introduction

### Study Objectives

Underground coal mining activities have been planned in areas below Winter Quarters Canyon over the next several years. Before, during, and after this mining occurs, Canyon Fuel committed to conducting studies of the riparian plant communities in these canyons to monitor potential impacts of the mining activities. The first such study began in 2005 with the objective to provide a comprehensive baseline data set of representative sample reaches of the *entire area* in Winter Quarters (and Woods Canyons) that could potentially be impacted by future underground mining. The 2005 monitoring year has been called the ***Initial Baseline Year*** for the riparian studies.

Regular monitoring of the riparian zones should provide data to determine long-term trends, natural variability and benchmark information including the possible impacts to the riparian plant communities caused by mining beneath the creeks of the canyons. That said, additional monitoring studies were planned to be conducted after the 2005 baseline study year. Or, in the subsequent years, the studies were planned to focus on locations where impacts from mining, if any, would most likely occur. In those monitoring years, sample frequency was designed to be intensified in the areas where: 1) underground mining is planned for the near future (for more baseline data), 2) where mining is currently occurring, and 3) where mining has occurred in the recent past.

The methodologies used in the studies were consistent between years. They were not designed to

provide data that could show *subtle* changes to community structure and species composition as a result of *minor* changes to the riparian habitat (which can occur as a result of several factors i.e. precipitation changes). Rather, the studies were designed to be compared with future monitoring studies in an attempt to document *major* impacts to the plant communities along the stream due to catastrophic events, such as loss of water and habitat from the effects of subsidence caused from underground mining.

### The Study Areas

Winter Quarters Canyon is located within the Wasatch Plateau, a high plateau that lies between the Colorado Plateau and Great Basin regions of western United States. The canyon is located about 3 miles west of the town of Scofield, in Carbon County, Utah. The study areas of Winter Quarters Canyon are located within the Manti-La Sal National Forest. Geologically, most of the area is Cretaceous in age with formations present that include the Price River, North Horn, and Blackhawk formations. The dominant plant communities of these canyons were riparian, spruce-fir, aspen/grass, sagebrush/grass and mountain herblands.

## Methods

### Sample Design, Transect Placement & Frequency

The riparian vegetation of specific reaches in Winter Quarters Canyon were surveyed in late-August through early-September 2007. Selection of the sample locations of the reaches were based on the underground coal mining schedule of the Skyline Mines. Like 2006, in 2007 the methods follow the *Initial Baseline Year* (2005) described above; the riparian vegetation surveys have been designed to concentrate on recently mined areas, current mining, and areas to be mined in the near future. More specifically, the surveys are to be conducted where mining activities are planned under the streams according to the following schedule: 1) two years prior to mining specific areas, 2) the year of the mining activities, and 3) two years after mining has occurred in the areas. During these study periods, sampling will be intensified by placing sample stations at regular intervals every 400 ft., rather than the 800 ft. spacing that was used in the *Baseline Year*. [NOTE: In the *Initial Baseline Year* (2005) sample locations were placed every 800 ft with the exception of those areas that were scheduled to be mined in late-2005; in those areas the 400 ft spacing was used].

Line transects were placed at each sample station. Locations and extent of the transects were semi-permanently marked using numbered and flagged wooden stakes and 12-inch metal rods. The vegetation monitoring methods of the studies have been primarily based on those described by the USDA Forest Service manual for a "*Level III Riparian Area Evaluation*" (Integrated Riparian

Evaluation Guide, March 1992). Qualitative and quantitative data were recorded at the sample stations established in the field. In the first year of the studies, the overall objective of the study plan was to begin monitoring years with one complete baseline data set for all riparian areas near the perennial streams located in the mine permit area prior to any mining. As mentioned, in the subsequent monitoring years, sample station locations have been determined and mapped based on the time period schedule for the proposed underground mining activities.

Geomorphological stream channel data outlined in the Level III protocol were not being recorded as part of this study because Canyon Fuel Company has conducted other studies that will suffice for this information. Additionally, soils information through the Natural Resources Conservation Service (NRCS) were not available for the study areas.

### Qualitative Data

The "Riparian Complex Data Sheet" shown on Table 1 lists all of the qualitative and

**TABLE 1: RIPARIAN COMPLEX DATA SHEET**

CLIENT:  
 COMPLEX: Riverine - Number  
 WATERBODY NAME:  
 LOCATION:  
 DATE:  
 OBSERVER(S):  
 QUAD NAME:  
 GEOLOGIC PARENT MATERIAL:  
 ASPECT:  
 STREAM GRADIENT:  
 ELEVATION: .  
 ADJACENT UPLAND VEGETATION (looking downstream)  
 Left: Right:  
 VEGETATIVE DESCRIPTION (Dominance by Community Types)  
 SUCCESSIONAL STATUS:  
 APPARENT FORAGE TREND:  
 ESTIMATED FORAGE PRODUCTION:  
 BEAVER ACTIVITY:  
 PHOTOGRAPH TAKEN:  
 LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA:  
 SPECIES OBSERVED:  
 POOL ATTRIBUTES  
     % area in pools:  
     % pool area made up of pools > 2' deep:  
 AQUATIC VEGETATION  
     % streambed with filamentous algae:  
     % stream margin with rooted aquatic:  
 BANK TYPE & VEGETATION OVERHANG  
     % bank length undercut (<90°):  
     % bank length gently sloping (>135°):  
     % bank length with overhanging vegetation:  
 BANK CONDITION (bankfull area only)  
     % bank length vegetated, stable:  
     % bank length unvegetated, stable:  
     % bank length vegetated, unstable:  
     % bank length unvegetated, unstable:  
 NOTES:  
 QUANTITATIVE DATA SUMMARY:  
 PHOTOGRAPHIC DOCUMENTATION:

quantitative data that has been, and will continue to be, collected in the future at each sample station.

Photographic stations for documentation and future comparisons have also been established at each sample location. A sample location map has been included in this report.

### Quantitative Data

USDA Forest Service protocol was employed as a model to drive the study plan for quantitative data. *Community Type Cover* is one method to record cover in the USFS Level III protocol. At the sample locations, transect lines have been placed across (or perpendicular to) the stream channel. By design, the line transects vary in lengths which are based on several factors. Although sometimes limited by topographical features, the intent was to make the transects long enough to cover the entire stream, its riparian communities, plus an additional 10 ft on each side of the stream to record the adjacent upland communities. Monitoring the total extent of the riparian plant communities including some upland community data should provide information about possible increases or decreases in the riparian communities relative to the adjacent upland communities.

Once the transects were placed, the line-intercept method was employed to measure the extent of each major riparian plant community. The plant communities have been named by the dominant two plant species. If only one species dominates the community by a wide margin, the plant community was named by this single species. In this report, when reference is made to the left or right side of the drainage, this means “river left” or “river right”, *as characterized by looking*

downstream.

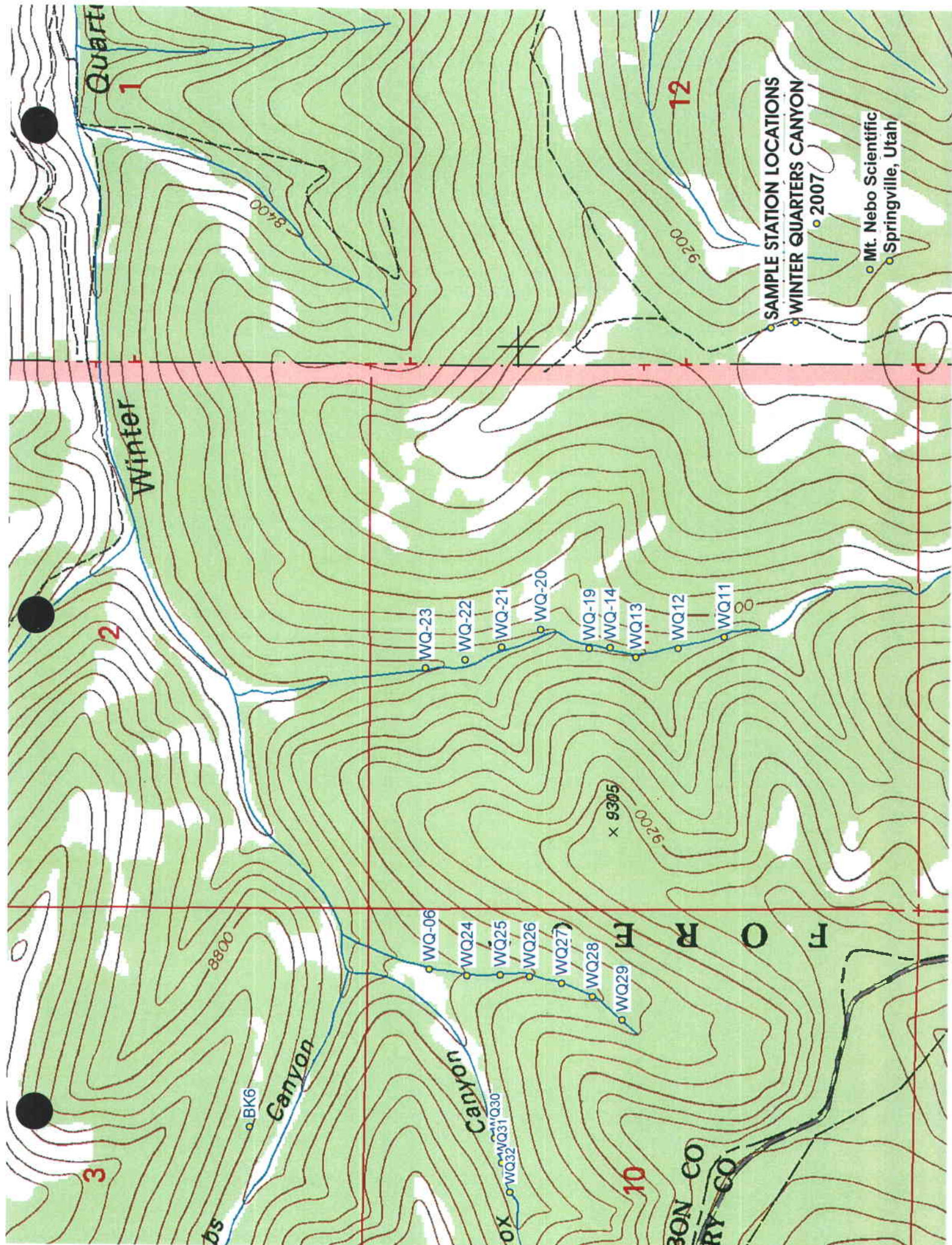
## Results & Discussion

Listed below is a summary of the sample stations for the study areas in 2007 (Table 2). For a map of the locations, refer to the *Sample Station Locations for Winter Quarters Canyon* in this report.

TABLE 2: Riparian Sample Stations in Winter Quarters Canyon 2007	
WQ-11	WQ-06
WQ-12	WQ-24
WQ-13	WQ-25
WQ-14	WQ-26
WQ-19	WQ-27
WQ-20	WQ-28
WQ-21	WQ-29
WQ-22	WQ-30
WQ-23	WQ-31
	WQ-32

Sample results are shown for each site on the data sheets provided in this report. Each sheet shows all qualitative and quantitative data recorded as well as photographic documentation.





SAMPLE STATION LOCATIONS  
WINTER QUARTERS CANYON

○ Mt. Nebo Scientific  
○ Springville, Utah

2007

Quart

Winter

Canyon

Canyon

F O R F

BON CO  
RY CO

BK6

WQ32, WQ31, WQ30

x 9305

WQ-06

WQ24

WQ25

WQ26

WQ27

WQ28

WQ29

WQ-23

WQ-22

WQ-21

WQ-20

WQ-19

WQ-14

WQ13

WQ12

WQ11



RIPARIAN COMPLEX DATA SHEET  
2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-11

WATERBODY NAME: Winter Quarters Canyon Creek (Section 11 tributary)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STREAM ASPECT: N

STREAM GRADIENT: 1-2 °

ELEVATION: 8,727 ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Grass/Forb/Spruce/Aspen

Right: Grass/Forb/Spruce/Aspen

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 600 lbs/acre

BEAVER ACTIVITY: Historical activity lower in this drainage.

PHOTOGRAPH TAKEN: Yes

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: Mining, grazing, hunting, recreation.

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Picea pungens</i>	<i>Ribes sp.</i>	<i>Achillea millefolium</i>	<i>Agrostis stolonifera</i>
<i>Populus tremuloides</i>		<i>Delphinium barbeyi</i>	<i>Bromus carinatus</i>
		<i>Geranium richardsonii</i>	<i>Carex hoodii</i>
		<i>Equisetum arvense</i>	
		<i>Lupinus sp.</i>	
		<i>Osmorhiza obtusa</i>	
		<i>Ranunculus cymbalaria</i>	

#### POOL ATTRIBUTES

% area in pools: 40

% pool area made up of pools > 2' deep: 0

#### AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: 10 (Racy)

#### BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 0

% bank length gently sloping (>135°): 0

% bank length with overhanging vegetation: 40

#### BANK CONDITION

% bank length vegetated, stable: 70

% bank length unvegetated, stable: 15

% bank length vegetated, unstable: 10

% bank length unvegetated, unstable: 5

#### NOTES:

- 1) The bottom of the steep bank is where I began the measurements for the riparian community.
- 2) The upper banks had some riparian species but it's obvious they were mostly influenced by side slope water.
- 3) In this Sec. 11 tributary of WQ Canyon, we sampled beginning at this WQ-11 site (or ~0.10 mi beyond where mining is planned in 2006 to ~0.10 mile past it where it ends in 2008).

## DATA SUMMARY

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### WQ-11: Cover by community types in Winter Quarters Canyon (2007).

---

<b>UPLAND VEGETATION</b>	Cover (ft)
<i>Grass/Forb/Picea pungens/Populus tremuloides</i>	20.00
<b>RIPARIAN VEGETATION</b>	
<u>Dominant Woody Species</u>	
<u>Dominant Herbaceous Species</u>	
<i>Agrostis stolonifera/Ranunculus cymbalaria</i>	2.00
<i>Agrostis stolonifera</i>	1.50
<b>TOTAL COVER (Upland Species)</b>	20.00
<b>TOTAL COVER (Riparian Species)</b>	3.50
<b>ROCK (channel)</b>	2.50
<b>WATER (channel)</b>	1.00
<b>BAREGROUND (channel)</b>	0.00
<b>LITTER</b>	0.00
<b>MOSS</b>	0.00
<b><u>TOTAL COVER</u></b>	<b><u>27.00</u></b>

## PHOTOGRAPHIC DOCUMENTATION



WQ-11

# RIPARIAN COMPLEX DATA SHEET

## 2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-12

WATERBODY NAME: Winter Quarters Canyon Creek (Section 11 tributary)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STEAM ASPECT: N

STREAM GRADIENT: 1-3 °

ELEVATION: 8,716 ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Blue Spruce

Right: Grass/Forb (to Aspen higher)

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 650 lbs/acre

BEAVER ACTIVITY: Historical use lower in this drainage

PHOTOGRAPH TAKEN: Yes

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: Mining, grazing, hunting, recreation.

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
		<i>Equisetum arvense</i>	<i>Agrostis stolonifera</i>
		<i>Mimulus guttatus</i>	<i>Elymus canadensis</i>
		<i>Ranunculus cymbalaria</i>	<i>Carex hoodii</i>
		<i>Rudbeckia occidentalis</i>	
		<i>Senecio sp.</i>	

#### POOL ATTRIBUTES

% area in pools: 25

% pool area made up of pools > 2' deep: 0

#### AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: 20 (Racy)

#### BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 0

% bank length gently sloping (>135°): 0

% bank length with overhanging vegetation: 50 (herbaceous)

#### BANK CONDITION

% bank length vegetated, stable: 75

% bank length unvegetated, stable: 25

% bank length vegetated, unstable: 0

% bank length unvegetated, unstable: 0

#### NOTES:

- 1) On the right side there were 2 trails. The lower trail went through the riparian community.
- 2) Called upland to trail on right, so this delineated more riparian than before. It could be changed back, but I think it's correct this year.
- 3) GPS EPE was 60 ft. in this area.
- 4) Transect width was 29' in 2005; it was 28' in 2006 (stake was down due to some soil movement); then 27' in 2006.

## DATA SUMMARY

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### WQ-12: Cover by community types in Winter Quarters Canyon (2007).

---

<b>UPLAND VEGETATION</b>	Cover (ft)
<i>Picea pungens</i>	8.00
<i>Grass/Forb</i>	6.00
<b>RIPARIAN VEGETATION</b>	
<u>Dominant Woody Species</u>	
<u>Dominant Herbaceous Species</u>	
<i>Agrostis stolonifera/Ranunculus cymbalaria</i>	8.00
<b>TOTAL COVER (Upland Species)</b>	14.00
<b>TOTAL COVER (Riparian Species)</b>	8.00
<b>ROCK (channel)</b>	3.50
<b>WATER (channel)</b>	1.50
<b>BAREGROUND (channel)</b>	0.00
<b>LITTER</b>	0.00
<b>MOSS</b>	0.00
<b>TOTAL COVER</b>	27.00

---



## PHOTOGRAPHIC DOCUMENTATION



WQ-12



RIPARIAN COMPLEX RIPARIAN COMPLEX DATA SHEET  
2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-13

WATERBODY NAME: Winter Quarters Canyon Creek (Section 11 tributary)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STEAM ASPECT: N

STREAM GRADIENT: 1-3°

ELEVATION: 8,673 ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Spruce/Aspen

Right: Aspen

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 700 lbs/acre

BEAVER ACTIVITY: Historical use lower in canyon.

PHOTOGRAPH TAKEN: Yes

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: Mining, grazing, hunting, recreation.

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Picea pungens</i>		<i>Achillea millefolium</i>	<i>Agrostis stolonifera</i>
<i>Populus tremuloides</i>		<i>Aster sp.</i>	<i>Bromus carinatus</i>
		<i>Epilobium sp.</i>	<i>Carex hoodii</i>
		<i>Geranium richardsonii</i>	<i>Elymus canadensis</i>
		<i>Helianthella uniflora</i>	<i>Phleum alpinum</i>
		<i>Mimulus guttatus</i>	<i>Poa pratensis</i>
		<i>Ranunculus cymbalaria</i>	
		<i>Senecio serra</i>	
		<i>Urtica dioica</i>	

#### POOL ATTRIBUTES

% area in pools: 10

% pool area made up of pools > 2' deep: 0

#### AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: 30 (Racy)

#### BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 0

% bank length gently sloping (>135°): 50

% bank length with overhanging vegetation: 5 (herbaceous)

#### BANK CONDITION

% bank length vegetated, stable: 85

% bank length unvegetated, stable: 15

% bank length vegetated, unstable: 0

% bank length unvegetated, unstable: 0

#### NOTES:

1) The species here seemed to be mostly influence by the stream (rather than hillside). I measured riparian species on the side from near the small blue spruce tree (5 ft) on the transect line.

2) Total transect length was 41.5' in 2006; (it was 42.0' in 2005 - possible downward movement of soil); 41.5' in 2007.

3) Stakes were replaced in 2006.

## DATA SUMMARY

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### WQ-13: Cover by community types in Winter Quarters Canyon (2007).

---

<b>UPLAND VEGETATION</b>	Cover (ft)
<i>Populus tremuloides</i> / <i>Picea pungens</i>	10.50
<i>Populus tremuloides</i>	9.50
<b>RIPARIAN VEGETATION</b>	
<u>Dominant Woody Species</u>	
<u>Dominant Herbaceous Species</u>	
<i>Agrostis stolonifera</i> / <i>Ranunculus cymbalaria</i>	15.00
<i>Carex hoodii</i> / <i>Agrostis stolonifera</i>	3.50
<b>TOTAL COVER (Upland Species)</b>	20.00
<b>TOTAL COVER (Riparian Species)</b>	18.50
<b>ROCK (channel)</b>	1.50
<b>WATER (channel)</b>	1.50
<b>BAREGROUND (channel)</b>	0.00
<b>LITTER</b>	0.00
<b>MOSS</b>	
<b>TOTAL COVER</b>	41.50

---

## PHOTOGRAPHIC DOCUMENTATION



WQ-13

# RIPARIAN COMPLEX DATA SHEET

## 2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-14

WATERBODY NAME: Winter Quarters Canyon Creek (Section 11 tributary)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STEAM ASPECT: N

STREAM GRADIENT: 1-3°

ELEVATION: 8,658 ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Spruce/Aspen Right: Spruce/Aspen

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 900 lbs/acre

BEAVER ACTIVITY: Historical use lower in canyon.

PHOTOGRAPH TAKEN: Yes

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: Mining, grazing, hunting, recreation.

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Picea pungens</i>	<i>Ribes</i>	<i>Aster sp.</i>	<i>Agrostis stolonifera</i>
<i>Populus tremuloides</i>		<i>Helianthella uniflora</i>	<i>Carex hoodii</i>
		<i>Mimulus guttatus</i>	<i>Elymus canadensis</i>
		<i>Ranunculus cymbalaria</i>	<i>Poa pratensis</i>
		<i>Senecio multilobatus</i>	
		<i>Thalictrum fendleri</i>	
		<i>Urtica dioica</i>	
		<i>Vicia americana</i>	

#### POOL ATTRIBUTES

% area in pools: 20

% pool area made up of pools > 2' deep: 0

#### AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: 10 (Racy)

#### BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 20

% bank length gently sloping (>135°): 60

% bank length with overhanging vegetation: 10

#### BANK CONDITION

% bank length vegetated, stable: 90

% bank length unvegetated, stable: 7

% bank length vegetated, unstable: 0

% bank length unvegetated, unstable: 3

#### NOTES:

1) Like WQ-13, the left side rose to a higher elevation. The species here seemed to be mostly influenced by the stream (rather than hillside).

2) Right side upland community measured was *Elymus canadensis*; left side was *Poa pratensis*/*Elymus canadensis*.

3) Unlike 2006 when the transect line measured 33', this year it was 32'.



## DATA SUMMARY

---

### WQ-14: Cover by community types in Winter Quarters Canyon (2007).

---

<b>UPLAND VEGETATION</b>	Cover (ft)
<i>Populus tremuloides/Picea pungens</i>	20.00
<b>RIPARIAN VEGETATION</b>	
<u>Dominant Woody Species</u>	
<u>Dominant Herbaceous Species</u>	
<i>Agrostis stolonifera</i>	9.00
<b>TOTAL COVER (Upland Species)</b>	20.00
<b>TOTAL COVER (Riparian Species)</b>	9.00
<b>ROCK (channel)</b>	1.5
<b>WATER (channel)</b>	1.5
<b>BAREGROUND (channel)</b>	0.00
<b>LITTER</b>	0.00
<b>MOSS</b>	0.00
<b>TOTAL COVER</b>	32.00

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## PHOTOGRAPHIC DOCUMENTATION



WQ-14

# RIPARIAN COMPLEX DATA SHEET

## 2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-19

WATERBODY NAME: Winter Quarters Canyon Creek (Section 11 tributary)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STEAM ASPECT: N

STREAM GRADIENT: 1-2 °

ELEVATION: 8,633ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Aspen

Right: Spruce/Fir

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 300 lbs/acre

BEAVER ACTIVITY: Historical activity lower in this drainage.

PHOTOGRAPH TAKEN: Yes

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: Mining, grazing, hunting, recreation.

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Picea pungens</i>		<i>Achillea millefolium</i>	<i>Poa secunda</i>
<i>Populus tremuloides</i>		<i>Epilobium sp.</i>	
		<i>Osmorhiza obtusa</i>	
		<i>Ranunculus cymbalaria</i>	
		<i>Rudbeckia occidentalis</i>	
		<i>Viguiera multiflora</i>	

#### POOL ATTRIBUTES

% area in pools: 50

% pool area made up of pools > 2' deep: 0

#### AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: 80 (Racy)

#### BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 10

% bank length gently sloping (>135°): ±10

% bank length with overhanging vegetation: 20

#### BANK CONDITION

% bank length vegetated, stable: 70

% bank length unvegetated, stable: 15

% bank length vegetated, unstable: 0

% bank length unvegetated, unstable: 15 (riparian banks stable)

#### NOTES:

- 1) Site located just upstream from a spring area.
- 2) Placed site upstream from the spring to decrease influence of the stream water.
- 3) Left hillside was sloughing in this area.
- 4) Transect length was 31' in 2006, then to 30' this year.

## DATA SUMMARY

---

### WQ-19: Cover by community types in Winter Quarters Canyon (2007).

---

<b>UPLAND VEGETATION</b>	Cover (ft)
<i>Populus tremuloides</i>	9.00
<i>Picea pungens/Abies</i> sp.	10.50
<b>RIPARIAN VEGETATION</b>	
<u>Dominant Woody Species</u>	
<u>Dominant Herbaceous Species</u>	
<i>Agrostis stolonifera/Ranunculus cymbalaria</i>	2.50
<i>Ranunculus cymbalaria</i>	2.50
<b>TOTAL COVER (Upland Species)</b>	19.50
<b>TOTAL COVER (Riparian Species)</b>	5.00
<b>ROCK (channel)</b>	0.00
<b>WATER (channel)</b>	4.50
<b>BAREGROUND (channel)</b>	0.00
<b>LITTER</b>	1.00
<b>MOSS</b>	0.00
<b>TOTAL COVER</b>	30.00

---



## PHOTOGRAPHIC DOCUMENTATION



WQ-19



# RIPARIAN COMPLEX DATA SHEET

## 2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-20

WATERBODY NAME: Winter Quarters Canyon Creek (Section 11 tributary)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STREAM ASPECT: N

STREAM GRADIENT: 1-3 °

ELEVATION: 8,567 ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Spruce/Aspen

Right: Aspen/Spruce

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 600 lbs/acre (right side)

BEAVER ACTIVITY: Historical use lower in this drainage

PHOTOGRAPH TAKEN: Yes

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: Mining, grazing, hunting, recreation.

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Picea pungens</i>		<i>Epilobium angustifolium</i>	<i>Agrostis stolonifera</i>
<i>Populus tremuloides</i>		<i>Equisetum arvense</i>	<i>Elymus canadensis</i>
		<i>Geranium richardsonii</i>	<i>Carex hoodii</i>
		<i>Rudbeckia occidentalis</i>	
		<i>Senecio serra</i>	
		<i>Thalictrum fendleri</i>	

POOL ATTRIBUTES

% area in pools: 20

% pool area made up of pools > 2' deep: 0

AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: 0

BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 50

% bank length gently sloping (>135°): 25

% bank length with overhanging vegetation: 5

BANK CONDITION

% bank length vegetated, stable: 85

% bank length unvegetated, stable: 15

% bank length vegetated, unstable: 0

% bank length unvegetated, unstable: 0

NOTES:

## DATA SUMMARY

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### WQ-20: Cover by community types in Winter Quarters Canyon (2007).

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<b>UPLAND VEGETATION</b>	Cover (ft)
<i>Populus tremuloides/Picea pungens</i>	20.00
<b>RIPARIAN VEGETATION</b>	
<u>Dominant Woody Species</u>	
<u>Dominant Herbaceous Species</u>	
<i>Agrostis stolonifera</i>	4.50
<b>TOTAL COVER (Upland Species)</b>	20.00
<b>TOTAL COVER (Riparian Species)</b>	4.50
<b>ROCK (channel)</b>	1.00
<b>WATER (channel)</b>	2.50
<b>BAREGROUND (channel)</b>	0.00
<b>LITTER</b>	0.00
<b>MOSS</b>	0.00
<b>TOTAL COVER</b>	28.00

---

## PHOTOGRAPHIC DOCUMENTATION



WQ-20

# RIPARIAN COMPLEX DATA SHEET

## 2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-21

WATERBODY NAME: Winter Quarters Canyon Creek (Section 11 tributary)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STREAM ASPECT: N

STREAM GRADIENT: 1-3 °

ELEVATION: 8,560 ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Open/Spruce/Aspen

Right: Open to Aspen

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 500 lbs/acre

BEAVER ACTIVITY: Historical use lower in canyon.

PHOTOGRAPH TAKEN: Yes

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: Mining, grazing, hunting, recreation.

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Picea pungens</i>	<i>Symphoricarpos oreophilus</i>	<i>Aster sp.</i>	<i>Agrostis stolonifera</i>
<i>Populus tremuloides</i>		<i>Carduus nutans</i>	<i>Carex hoodii</i>
		<i>Helianthella uniflora</i>	<i>Elymus canadensis</i>
		<i>Ranunculus cymbalaria</i> *	
		<i>Senecio serra</i> *	
		<i>Urtica dioica</i> *	

POOL ATTRIBUTES

% area in pools: 5

% pool area made up of pools > 2' deep: 0

AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: 30 (Racy)

BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 0

% bank length gently sloping (>135°): 50

% bank length with overhanging vegetation: 0

BANK CONDITION

% bank length vegetated, stable: 85

% bank length unvegetated, stable: 15

% bank length vegetated, unstable: 0

% bank length unvegetated, unstable: 0

NOTES:

- 1) Good study site - there was an obvious transition from stream riparian to upland.
- 2) The riparian zone here was wider than up- or down-stream.
- 3) Site was located in a flatter area that holds the riparian species well.
- 4) Transect length had decreased 1.0' (from 37' to 36') from 2006 to 2007.
- 5) Logs and litter in stream (see photo).



## DATA SUMMARY

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### WQ-21: Cover by community types in Winter Quarters Canyon (2007).

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<b>UPLAND VEGETATION</b>	Cover (ft)
<i>Grass/Forb/Picea pungens/Populus tremuloides</i>	9.00
<i>Populus tremuloides/Mountain Herbland</i>	11.00
<b>RIPARIAN VEGETATION</b>	
<u>Dominant Woody Species</u>	
<u>Dominant Herbaceous Species</u>	
<i>Agrostis stolonifera</i>	10.50
<b>TOTAL COVER (Upland Species)</b>	20.00
<b>TOTAL COVER (Riparian Species)</b>	10.50
<b>ROCK (channel)</b>	1.50
<b>WATER (channel)</b>	2.00
<b>BAREGROUND (channel)</b>	0.00
<b>LITTER</b>	2.00
<b>MOSS</b>	0.00
<b><u>TOTAL COVER</u></b>	<b>36.00</b>

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## PHOTOGRAPHIC DOCUMENTATION



WQ-21

# RIPARIAN COMPLEX DATA SHEET

## 2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-22

WATERBODY NAME: Winter Quarters Canyon Creek (Section 11 tributary)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STEAM ASPECT: N

STREAM GRADIENT: 1-3 °

ELEVATION: 8,527 ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Spruce/Aspen

Right: Open to Aspen

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 850 lbs/acre

BEAVER ACTIVITY: Historical use lower in canyon

PHOTOGRAPH TAKEN: Yes

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: Mining, grazing, hunting, recreation.

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Picea pungens</i>	<i>Ribes</i>	<i>Geranium richardsonii</i>	<i>Agrostis stolonifera</i>
<i>Populus tremuloides</i>		<i>Senecio serra</i>	<i>Carex hoodii</i>
		<i>Ranunculus cymbalaria</i>	<i>Elymus canadensis</i>
		<i>Urtica dioica</i>	<i>Carex nebrascensis</i>
		<i>Veratrum californicum</i>	<i>Juncus longistylis</i>

#### POOL ATTRIBUTES

% area in pools: 15

% pool area made up of pools > 2' deep: 0

#### AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: 0

#### BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 0

% bank length gently sloping (>135°): 50

% bank length with overhanging vegetation: 5

#### BANK CONDITION

% bank length vegetated, stable: 95

% bank length unvegetated, stable: 5

% bank length vegetated, unstable: 0

% bank length unvegetated, unstable: 0

:

#### NOTES:

- 1) There was a wide riparian area on the left side.
- 2) It was difficult to tell where the stream water or the hillside water influenced the riparian plants, but I thought the stream had most influence in the area where the riparian cover approached 100%. On the left side, this was an area of about 12'.
- 3) There were riparian spp. at higher elevations where I considered it was more upland.

## DATA SUMMARY

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### WQ-22: Cover by community types in Winter Quarters Canyon (2007).

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<b>UPLAND VEGETATION</b>	Cover (ft)
<i>Populus tremuloides/Picea pungens</i>	10.00
<i>Populus tremuloides/Mountain Herbland</i>	10.00
 <b>RIPARIAN VEGETATION</b>	
<u>Dominant Woody Species</u>	
 <u>Dominant Herbaceous Species</u>	
<i>Agrostis stolonifera/Geranium richardsonii</i>	20.00
 <b>TOTAL COVER (Upland Species)</b>	20.00
<b>TOTAL COVER (Riparian Species)</b>	20.00
<b>ROCK (channel)</b>	1.00
<b>WATER (channel)</b>	1.00
<b>BAREGROUND (channel)</b>	1.00
<b>LITTER</b>	0.00
<b>MOSS</b>	0.00
 <b>TOTAL COVER</b>	 43.00

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## PHOTOGRAPHIC DOCUMENTATION



WQ-22



# RIPARIAN COMPLEX DATA SHEET

## 2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-23

WATERBODY NAME: Winter Quarters Canyon Creek (Section 11 tributary)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STEAM ASPECT: N

STREAM GRADIENT: 1-3 °

ELEVATION: 8,481 ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Spruce/Fir

Right: Open to Aspen

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 350 lbs/acre

BEAVER ACTIVITY: Historical use lower in canyon

PHOTOGRAPH TAKEN: Yes

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: Mining, grazing, hunting, recreation.

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Picea pungens</i>		<i>Equisetum arvense</i>	<i>Agrostis stolonifera</i>
<i>Populus tremuloides</i>		<i>Geranium richardsonii</i>	<i>Carex hoodii</i>
		<i>Ranunculus cymbalaria</i>	<i>Elymus canadensis</i>
		<i>Senecio serra</i>	

POOL ATTRIBUTES

% area in pools: 20

% pool area made up of pools > 2' deep: 0

AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: 0

BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 0

% bank length gently sloping (>135°): 10

% bank length with overhanging vegetation: 20

BANK CONDITION

% bank length vegetated, stable: 85

% bank length unvegetated, stable: 15

% bank length vegetated, unstable: 0

% bank length unvegetated, unstable: 0

NOTES:

1) On the left side, the upper 3 ft of the riparian zone may be influenced by hillside *and* stream water.

2) This sample site was located very near where underground mining ends in 2008.

## DATA SUMMARY

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### WQ-23: Cover by community types in Winter Quarters Canyon (2007).

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<b>UPLAND VEGETATION</b>	Cover (ft)
<i>Abies sp/Picea pungens</i>	9.00
<i>Populus tremuloides/Mountain Herbland</i>	10.00

### **RIPARIAN VEGETATION**

#### Dominant Woody Species

#### Dominant Herbaceous Species

<i>Agrostis stolonifera</i>	9.50
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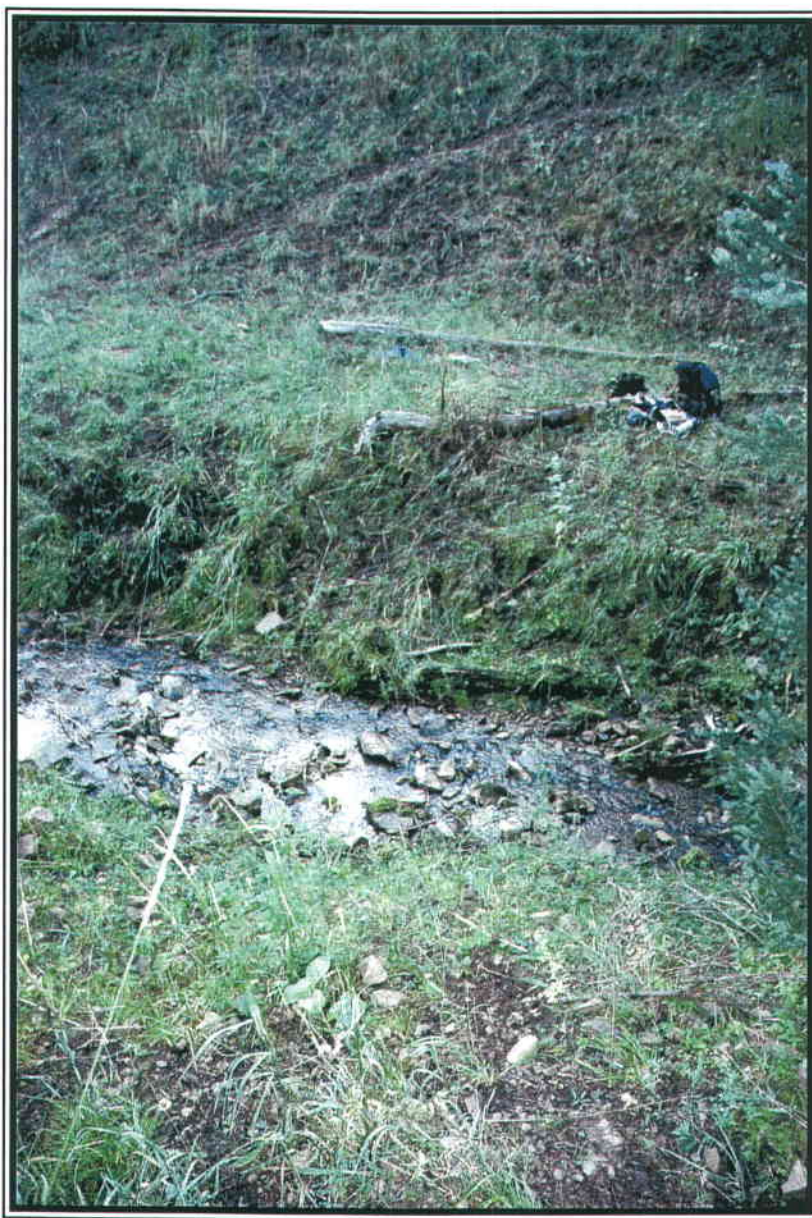
<b>TOTAL COVER (Upland Species)</b>	19.00
<b>TOTAL COVER (Riparian Species)</b>	9.50
<b>ROCK (channel)</b>	1.50
<b>WATER (channel)</b>	3.00
<b>BAREGROUND (channel)</b>	0.00
<b>LITTER</b>	0.00
<b>MOSS</b>	0.00

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<b>TOTAL COVER</b>	<b>33.00</b>
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## PHOTOGRAPHIC DOCUMENTATION



WQ-23

RIPARIAN COMPLEX DATA SHEET  
2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-06

WATERBODY NAME: Winter Quarters Canyon Creek (Unnamed tributary east of Box Canyon)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STEAM ASPECT: N

STREAM GRADIENT: 1-3 °

ELEVATION: 8,709ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Blue Spruce                      Right: Blue Spruce

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 500 lbs/acre

BEAVER ACTIVITY: No

PHOTOGRAPH TAKEN: Yes

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: Mining, grazing, hunting, recreation.

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Picea pungens</i>		<i>Achillea millefolium</i>	<i>Agrostis stolonifera</i>
		<i>Delphinium barbeyi</i>	<i>Bromus carinatus</i>
		<i>Geranium richardsonii</i>	
		<i>Osmorhiza obtusa</i>	
		<i>Ranunculus cymbalaria</i>	
		<i>Rudbeckia occidentalis</i>	

#### POOL ATTRIBUTES

% area in pools: 35

% pool area made up of pools > 2' deep: 0

#### AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: 0

#### BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 0

% bank length gently sloping (>135°): 10

% bank length with overhanging vegetation: 50 (woody)

#### BANK CONDITION

% bank length vegetated, stable: 90

% bank length unvegetated, stable: 0

% bank length vegetated, unstable: 5

% bank length unvegetated, unstable: 5

#### NOTES:

1) Good supply of water this year

2) Estimated ~ 3 gal/min?

3) The right bank of this site was steep and moisture from the bank may also influence the riparian vegetation.

4) The riparian species on the banks were not well defined visually.

5) This is the approximate area where underground mining will end in 2009.



## DATA SUMMARY

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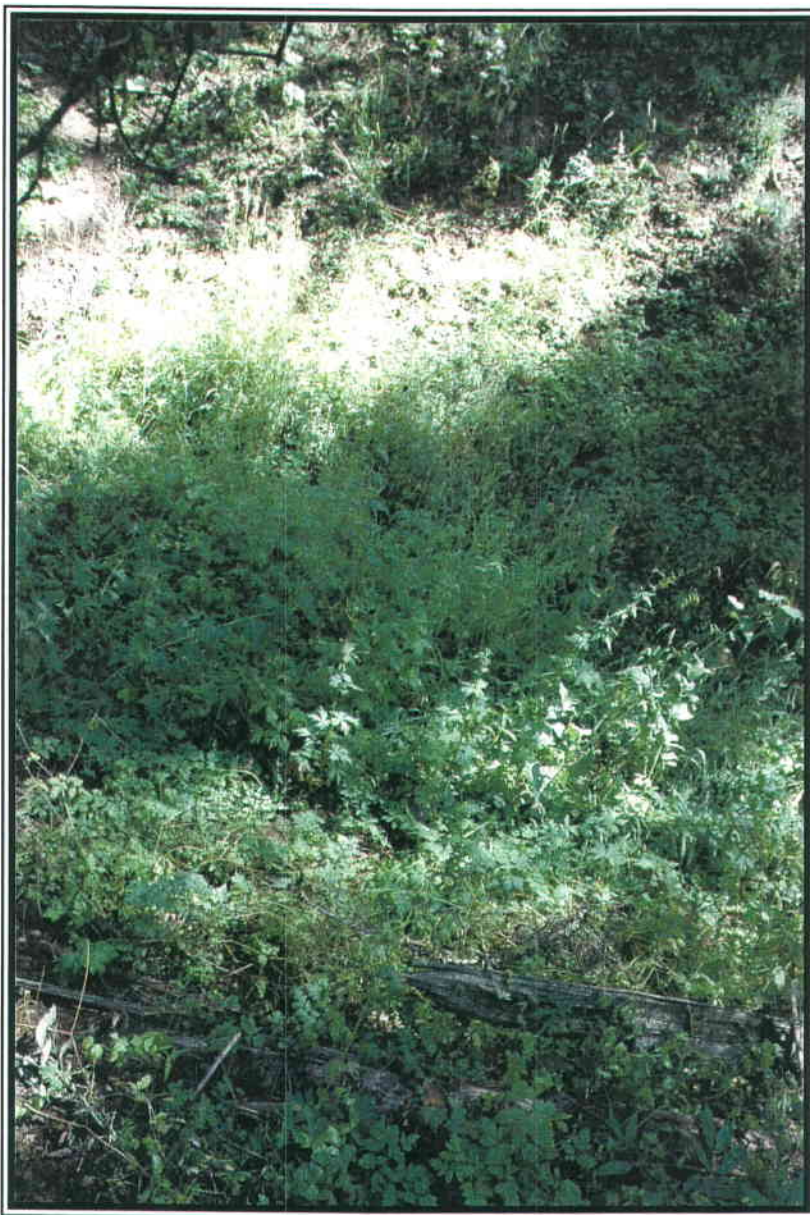
### WQ-06: Cover by community types in Winter Quarters Canyon (2007).

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<b>UPLAND VEGETATION</b>	Cover (ft)
<i>Picea pungens</i>	8.50
<i>Picea pungens</i>	13.00
<b>RIPARIAN VEGETATION</b>	
<u>Dominant Woody Species</u>	
<u>Dominant Herbaceous Species</u>	
<i>Agrostis stolonifera</i>	4.50
<i>Agrostis stolonifera</i> / <i>Geranium richardsonii</i>	3.00
<b>TOTAL COVER (Upland Species)</b>	21.50
<b>TOTAL COVER (Riparian Species)</b>	7.50
<b>ROCK (channel)</b>	1.0
<b>WATER (channel)</b>	1.00
<b>BAREGROUND (channel)</b>	0.50
<b>LITTER</b>	0.00
<b>MOSS</b>	0.00
<b>TOTAL COVER</b>	31.50

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## PHOTOGRAPHIC DOCUMENTATION



WQ-06

RIPARIAN COMPLEX DATA SHEET  
2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-24 (new site this year)

WATERBODY NAME: Winter Quarters Canyon Creek (Unnamed tributary east of Box Canyon)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STEAM ASPECT: N

STREAM GRADIENT: 1-3°

ELEVATION: 8,737 ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Grass/Forb (Ruoc)

Right: Grass/Forb (Ruoc)

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 600 lbs/acre

BEAVER ACTIVITY: No

PHOTOGRAPH TAKEN: Yes

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: Mining, grazing, hunting, recreation.

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Picea pungens</i>		<i>Geranium richardsonii</i>	<i>Agrostis stolonifera</i>
<i>Populus tremuloides</i>		<i>Mimulus guttatus</i>	<i>Elymus canadensis</i>
		<i>Ranunculus cymbalaria</i>	
		<i>Rudbeckia occidentalis</i>	
		<i>Senecio serra</i>	

#### POOL ATTRIBUTES

% area in pools: 50

% pool area made up of pools > 2' deep: no

#### AQUATIC VEGETATION

% streambed with filamentous algae: no

% stream margin with rooted aquatic: no

#### BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 50

% bank length gently sloping (>135°): 0

% bank length with overhanging vegetation: 100 (herbaceous)

#### BANK CONDITION

% bank length vegetated, stable: 80

% bank length unvegetated, stable: 0

% bank length vegetated, unstable: 20

% bank length unvegetated, unstable: 0

NOTES:

## DATA SUMMARY

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### WQ-24: Cover by community types in Winter Quarters Canyon (2007).

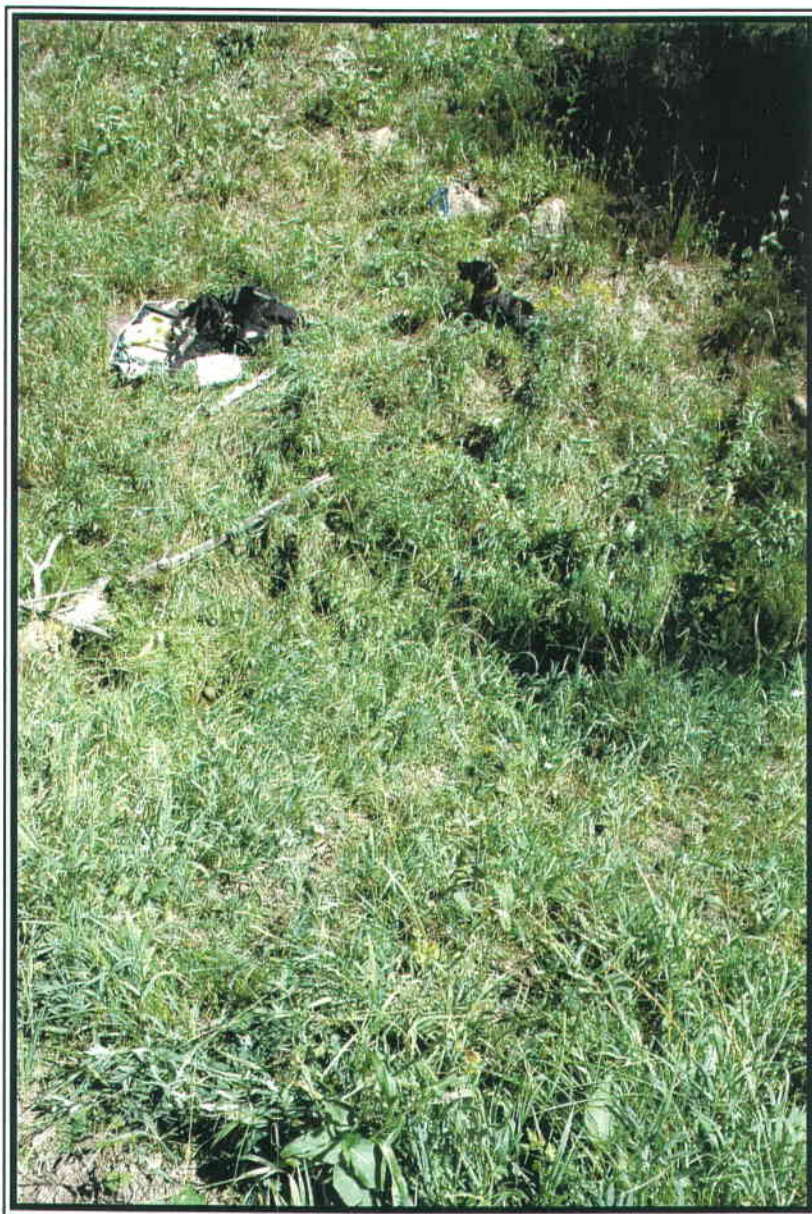
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<b>UPLAND VEGETATION</b>	Cover (ft)
<i>Rudbeckia occidentalis/Grass</i>	10.00
<i>Rudbeckia occidentalis/Grass</i>	10.00
 <b>RIPARIAN VEGETATION</b>	
<u>Dominant Woody Species</u>	
 <u>Dominant Herbaceous Species</u>	
 <i>Agrostis stolonifera</i>	5.50
 <b>TOTAL COVER (Upland Species)</b>	20.00
<b>TOTAL COVER (Riparian Species)</b>	5.50
<b>ROCK (channel)</b>	0.00
<b>WATER (channel)</b>	2.50
<b>BAREGROUND (channel)</b>	0.00
<b>LITTER</b>	0.00
<b>MOSS</b>	0.00
 <b>TOTAL COVER</b>	<b>28.00</b>

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## PHOTOGRAPHIC DOCUMENTATION



WQ-24



RIPARIAN COMPLEX DATA SHEET  
2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-25

WATERBODY NAME: Winter Quarters Canyon Creek (Unnamed tributary east of Box Canyon)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STEAM ASPECT: N

STREAM GRADIENT: 1-3 °

ELEVATION: 8,783 ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Spruce/Fir/Aspen

Right: Spruce/Fir/Aspen

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 650 lbs/acre

BEAVER ACTIVITY: No

PHOTOGRAPH TAKEN: Yes

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: Mining, grazing, hunting, recreation.

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Abies lasiocarpa</i>	<i>Ribes sp.</i>	<i>Geranium richardsonii</i>	<i>Agrostis stolonifera</i>
<i>Picea pungens</i>		<i>Osmorhiza obtusa</i>	<i>Elymus spicatus</i>
<i>Populus tremuloides</i>		<i>Ranunculus cymbalaria</i>	

POOL ATTRIBUTES

% area in pools: 50

% pool area made up of pools > 2' deep: 0

AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: Some rooted Racy

BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 10

% bank length gently sloping (>135°): 30

% bank length with overhanging vegetation: 100 (herbaceous)

BANK CONDITION

% bank length vegetated, stable: 90

% bank length unvegetated, stable: 10

% bank length vegetated, unstable: 0

% bank length unvegetated, unstable: 0

NOTES:

1) Good, well-defined river channel.

2) Bank slope increases abruptly. Therefore riparian habitat on right.

## DATA SUMMARY

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### WQ-25: Cover by community types in Winter Quarters Canyon (2007).

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<b>UPLAND VEGETATION</b>	Cover (ft)
<i>Picea pungens/Abies lasiocarpa/Populus tremuloides</i>	10.00
<i>Picea pungens/Abies lasiocarpa/Populus tremuloides</i>	10.00

### **RIPARIAN VEGETATION**

#### Dominant Woody Species

#### Dominant Herbaceous Species

<i>Agrostis stolonifera</i>	7.00
<i>Ranunculus cymbalaria</i>	2.00

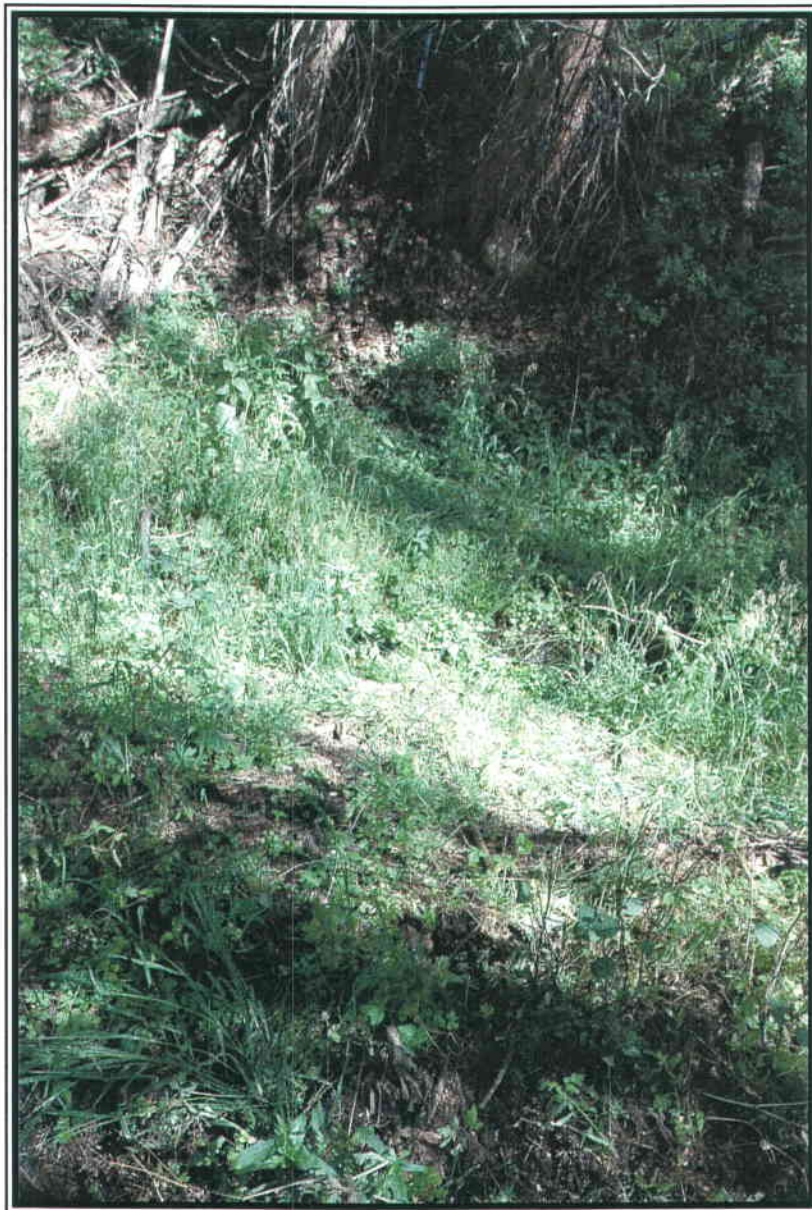
<b>TOTAL COVER (Upland Species)</b>	20.00
<b>TOTAL COVER (Riparian Species)</b>	9.00
<b>ROCK (channel)</b>	0.00
<b>WATER (channel)</b>	1.00
<b>BAREGROUND (channel)</b>	0.00
<b>LITTER</b>	0.00
<b>MOSS</b>	0.00

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<b><u>TOTAL COVER</u></b>	<b><u>30.00</u></b>
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## PHOTOGRAPHIC DOCUMENTATION



WQ-25

RIPARIAN COMPLEX DATA SHEET  
2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-26

WATERBODY NAME: Winter Quarters Canyon Creek (Unnamed tributary east of Box Canyon)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STREAM ASPECT: N

STREAM GRADIENT: 1-3 °

ELEVATION: 8,804 ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Blue Spruce

Right: Grass/Forb

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 500 lbs/acre

BEAVER ACTIVITY: No

PHOTOGRAPH TAKEN: **Yes**

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: Mining, grazing, hunting, recreation.

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Picea pungens</i>		<i>Aster sp.</i>	<i>Agrostis stolonifera</i>
<i>Populus tremuloides</i>		<i>Geranium richardsonii</i>	<i>Bromus carinatus</i>
		<i>Lathyrus lanszwertii</i>	<i>Elymus spicatus</i>
		<i>Mimulus guttatus</i>	
		<i>Ranunculus cymbalaria</i>	
		<i>Rudbeckia occidentalis</i>	
		<i>Wyethia amplexicaulis</i>	

#### POOL ATTRIBUTES

% area in pools: 50

% pool area made up of pools > 2' deep: 0

#### AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: 0

#### BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 30

% bank length gently sloping (>135°): ?

% bank length with overhanging vegetation: 100 (herbaceous)

#### BANK CONDITION

% bank length vegetated, stable: 90

% bank length unvegetated, stable: 10

% bank length vegetated, unstable: 0

% bank length unvegetated, unstable: 0

#### NOTES:

1) Approximate beginning of mining year 2009.



## DATA SUMMARY

---

### WQ-26: Cover by community types in Winter Quarters Canyon (2007).

---

#### UPLAND VEGETATION

<i>Populus tremuloides/Picea pungens</i>	10.00
Grasses/Forbs	10.00

#### RIPARIAN VEGETATION

##### Dominant Woody Species

##### Dominant Herbaceous Species

<i>Agrostis stolonifera</i>	2.00
<i>Ranunculus cymbalaria</i>	2.00

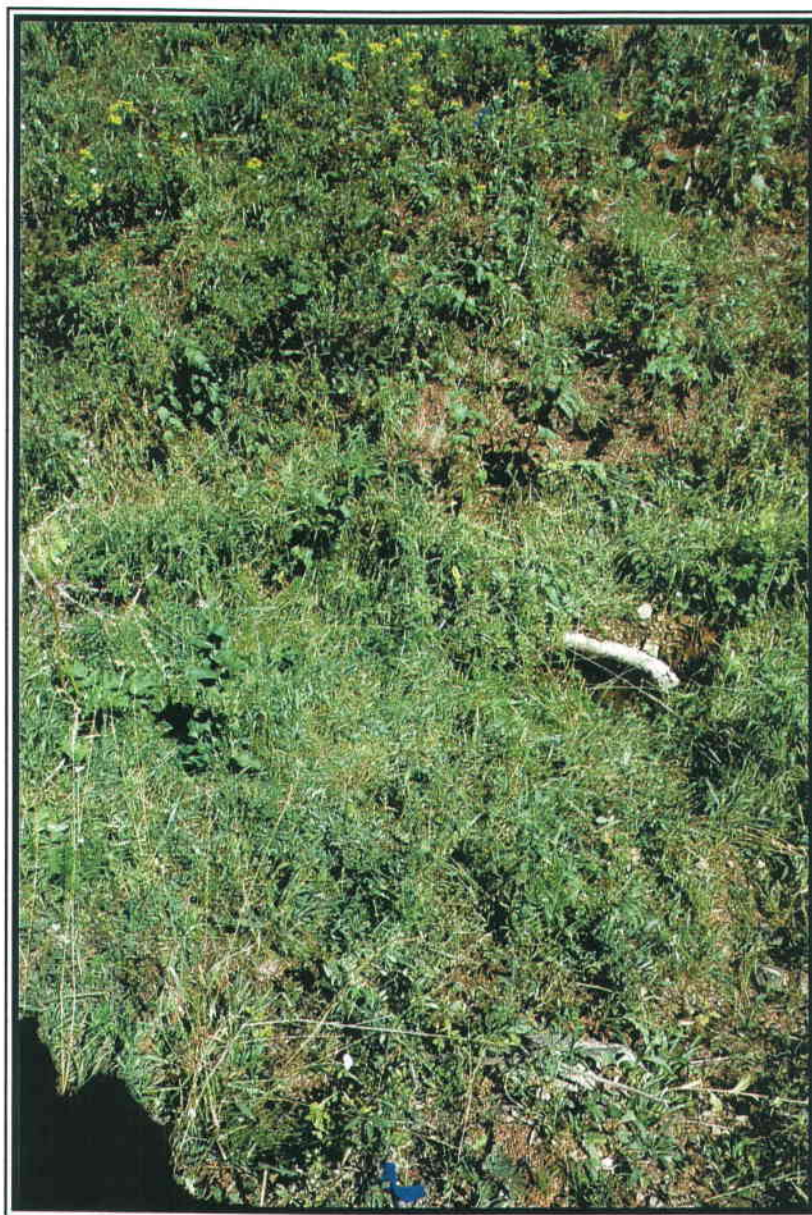
TOTAL COVER (Upland Species)	20.00
TOTAL COVER (Riparian Species)	4.00
ROCK (channel)	0.00
WATER (channel)	2.00
BAREGROUND (channel)	0.00
LITTER	0.00
MOSS	0.00

---

<b>TOTAL COVER</b>	<b>26.00</b>
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## PHOTOGRAPHIC DOCUMENTATION



WQ-26

# RIPARIAN COMPLEX DATA SHEET

## 2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-27

WATERBODY NAME: Winter Quarters Canyon Creek (Unnamed tributary east of Box Canyon)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STEAM ASPECT: N

STREAM GRADIENT: 1-3 °

ELEVATION: 8,858 ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left:

Right:

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 600 lbs/acre

BEAVER ACTIVITY: No

PHOTOGRAPH TAKEN: Yes

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: Mining, grazing, hunting, recreation.

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Picea pungens</i>		<i>Achillea millefolium</i>	<i>Agrostis stolonifera</i>
<i>Populus tremuloides</i>		<i>Geranium richardsonii</i>	
		<i>Mimulus guttatus</i>	
		<i>Nasturtium officinale</i>	
		<i>Ranunculus cymbalaria</i>	
		<i>Rudbeckia occidentalis</i>	

#### POOL ATTRIBUTES

% area in pools: 20

% pool area made up of pools > 2' deep: 0

#### AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: 10 (*Nasturtium officinale*)

#### BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 40

% bank length gently sloping (>135°): 30

% bank length with overhanging vegetation: 50 (herbaceous)

#### BANK CONDITION

% bank length vegetated, stable: 50

% bank length unvegetated, stable: 10

% bank length vegetated, unstable: 30

% bank length unvegetated, unstable: 10

#### NOTES:

1) Good well-defined flat area with Agst on right side.

2) Mine maps indicated that this sample area is above 2008 mining year.

## DATA SUMMARY

---

### WQ-27: Cover by community types in Winter Quarters Canyon (2007).

---

UPLAND VEGETATION	Cover (ft)
	10.00
	10.00
<b>RIPARIAN VEGETATION</b>	
<u>Dominant Woody Species</u>	
<u>Dominant Herbaceous Species</u>	
<i>Agrostis stolonifera</i>	14.50
<b>TOTAL COVER (Upland Species)</b>	20.00
<b>TOTAL COVER (Riparian Species)</b>	14.50
<b>ROCK (channel)</b>	0.00
<b>WATER (channel)</b>	1.50
<b>BAREGROUND (channel)</b>	0.00
<b>LITTER</b>	0.00
<b>MOSS</b>	0.00
<b>TOTAL COVER</b>	36.00

---



## PHOTOGRAPHIC DOCUMENTATION



WQ-27



# RIPARIAN COMPLEX DATA SHEET

## 2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-28

WATERBODY NAME: Winter Quarters Canyon Creek (Unnamed tributary east of Box Canyon)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STEAM ASPECT: N

STREAM GRADIENT: 1-3 °

ELEVATION: 8,879 ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Conifer/Aspen      Right: Conifer/Aspen

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 350 lbs/acre

BEAVER ACTIVITY: No

PHOTOGRAPH TAKEN: Yes

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: Mining, grazing, hunting, recreation.

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Picea pungens</i>		<i>Delphinium barbeyi</i>	<i>Agrostis stolonifera</i>
<i>Populus tremuloides</i>		<i>Geranium richardsonii</i>	<i>Avena fatua</i>
		<i>Osmorhiza obtusa</i>	<i>Carex hoodii</i>
		<i>Ranunculus cymbalaria</i>	
		<i>Thalictrum fendleri</i>	
		<i>Veratrum californicum</i>	

#### POOL ATTRIBUTES

% area in pools: 30

% pool area made up of pools > 2' deep: 0

#### AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: 0

#### BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 50

% bank length gently sloping (>135°): 50

% bank length with overhanging vegetation: 75 (herbaceous)

#### BANK CONDITION

% bank length vegetated, stable: 70

% bank length unvegetated, stable: 5

% bank length vegetated, unstable: 20

% bank length unvegetated, unstable: 5

#### NOTES:

- 1) Good water flow, but it's decreasing as elevation increases.
- 2) Our map indicates that this sample site is approximately (above) mid-2008 mine activities.

## DATA SUMMARY

---

**WQ-28: Cover by community types in Winter Quarters Canyon (2007).**

---

<b>UPLAND VEGETATION</b>	Cover (ft)
<i>Populus tremuloides/Picea pungens</i>	10.00
<i>Populus tremuloides/Picea pungens</i>	10.00
 <b>RIPARIAN VEGETATION</b>	
<u>Dominant Woody Species</u>	
 <u>Dominant Herbaceous Species</u>	
 <i>Agrostis stolonifera/Geranium richardsonii</i>	4.00
<i>Agrostis stolonifera/Ranunculus cymbalaria</i>	3.50
 <b>TOTAL COVER (Upland Species)</b>	20.00
<b>TOTAL COVER (Riparian Species)</b>	7.50
<b>ROCK (channel)</b>	0.00
<b>WATER (channel)</b>	1.50
<b>BAREGROUND (channel)</b>	0.00
<b>LITTER</b>	0.00
<b>MOSS</b>	0.00
 <b>TOTAL COVER</b>	<b>29.00</b>

---

## PHOTOGRAPHIC DOCUMENTATION



WQ-28

# RIPARIAN COMPLEX DATA SHEET

## 2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-29

WATERBODY NAME: Winter Quarters Canyon Creek (Unnamed tributary east of Box Canyon)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STEAM ASPECT: N

STREAM GRADIENT: 1-3°

ELEVATION: 8,939 ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Conifer/Aspen      Right: Conifer/Aspen

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 500 lbs/acre

BEAVER ACTIVITY: No

PHOTOGRAPH TAKEN: *Yes*

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: *Mining, grazing, hunting, recreation.*

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Picea pungens</i>	<i>Ribes sp.</i>	<i>Osmorhiza obtusa</i>	<i>Agrostis stolonifera</i>
<i>Populus tremuloides</i>		<i>Rudbeckia occidentalis</i>	

POOL ATTRIBUTES

% area in pools: 20

% pool area made up of pools > 2' deep: 0

AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: 0

BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 50

% bank length gently sloping (>135°): 0

% bank length with overhanging vegetation:

BANK CONDITION

% bank length vegetated, stable: 50

% bank length unvegetated, stable: 20

% bank length vegetated, unstable: 25

% bank length unvegetated, unstable: 5

NOTES:

- 1) Most of left bank was called "upland" because the redtop occurring there seemed to be more influenced by side slope moisture.
- 2) There was water flow at this elevation too.
- 3) It was too late in the day to follow water to find the upper elevation limits of the water in the creek.



## DATA SUMMARY

---

### WQ-29: Cover by community types in Winter Quarters Canyon (2007).

---

<b>UPLAND VEGETATION</b>	Cover (ft)
<i>Populus tremuloides/Picea pungens</i>	10.00
<i>Populus tremuloides/Picea pungens</i>	10.00
 <b>RIPARIAN VEGETATION</b>	
<u>Dominant Woody Species</u>	
 <u>Dominant Herbaceous Species</u>	
 <i>Agrostis stolonifera</i>	7.50
<b>TOTAL COVER (Upland Species)</b>	20.00
<b>TOTAL COVER (Riparian Species)</b>	7.50
<b>ROCK (channel)</b>	1.50
<b>WATER (channel)</b>	1.00
<b>BAREGROUND (channel)</b>	0.00
<b>LITTER</b>	0.00
<b>MOSS</b>	0.00
 <b>TOTAL COVER</b>	 30.00

---

## PHOTOGRAPHIC DOCUMENTATION



WQ-29

RIPARIAN COMPLEX DATA SHEET  
2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-30

WATERBODY NAME: Winter Quarters Canyon Creek (Box Canyon)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STREAM ASPECT: ENE

STREAM GRADIENT: 1-3 °

ELEVATION: 8,856 ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Aspen/Conifer

Right: Conifer

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 800 lbs/acre

BEAVER ACTIVITY: No

PHOTOGRAPH TAKEN: Yes

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: Mining, grazing, hunting, recreation.

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Picea pungens</i>	<i>Ribes sp.</i>	<i>Geranium richardsonii</i>	<i>Carex hoodii</i>
<i>Populus tremuloides</i>		<i>Lathyrus lanszwertii</i>	
		<i>Ranunculus cymbalaria</i>	

POOL ATTRIBUTES

% area in pools: 50

% pool area made up of pools > 2' deep: 0

AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: 0

BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 60

% bank length gently sloping (>135°): 40

% bank length with overhanging vegetation: 95 (shrubs and herbs)

BANK CONDITION

% bank length vegetated, stable: 70

% bank length unvegetated, stable: 5

% bank length vegetated, unstable: 20

% bank length unvegetated, unstable: 5

NOTES:

1) The upland vegetation was measured on left side at 8 ft (not 10 ft) because when one moves laterally away from stream from riparian to upland, there was a drop in elevation where redtop was again the dominant species.

## DATA SUMMARY

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### WQ-30 Cover by community types in Winter Quarters Canyon (2007).

---

<b>UPLAND VEGETATION</b>	Cover (ft)
<i>Populus tremuloides/Picea pungens</i>	10.00
<i>Picea pungens</i>	8.00
 <b>RIPARIAN VEGETATION</b>	
<u>Dominant Woody Species</u>	
 <u>Dominant Herbaceous Species</u>	
 <i>Agrostis stolonifera</i>	1.00
<i>Agrostis stolonifera/Urtica dioica</i>	6.00
 <b>TOTAL COVER (Upland Species)</b>	18.00
<b>TOTAL COVER (Riparian Species)</b>	7.00
<b>ROCK (channel)</b>	0.00
<b>WATER (channel)</b>	3.00
<b>BAREGROUND (channel)</b>	0.00
<b>LITTER</b>	0.00
<b>MOSS</b>	0.00
 <b>TOTAL COVER</b>	28.00

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## PHOTOGRAPHIC DOCUMENTATION



WQ-30



# RIPARIAN COMPLEX DATA SHEET

## 2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-31

WATERBODY NAME: Winter Quarters Canyon Creek (Box Canyon)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STEAM ASPECT: ENE

STREAM GRADIENT: 1-3°

ELEVATION: 8,868 ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Aspen

Right: Conifer

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 300 lbs/acre

BEAVER ACTIVITY: No

PHOTOGRAPH TAKEN: *Yes*

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: *Mining, grazing, hunting, recreation.*

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Abies lasiocarpa</i>		<i>Arnica cordifolia</i>	<i>Agrostis stolonifera</i>
<i>Picea pungens</i>	<i>Symphoricarpos oreophilus</i>	<i>Equisetum arvensis</i>	<i>Calamagrostis canadensis</i>
<i>Populus tremuloides</i>		<i>Geranium richardsonii</i>	
		<i>Ranunculus cymbalaria</i>	
		<i>Rudbeckia occidentalis</i>	

#### POOL ATTRIBUTES

% area in pools: 30

% pool area made up of pools > 2' deep: 0

#### AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: 0

#### BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 100

% bank length gently sloping (>135°): 0

% bank length with overhanging vegetation: 0

#### BANK CONDITION

% bank length vegetated, stable: 80

% bank length unvegetated, stable: 5

% bank length vegetated, unstable: 10

% bank length unvegetated, unstable: 5

#### NOTES:

- 1) This was a good sample site because the riparian and upland zones were obvious.
- 2) There was no ambiguity about what water was influencing the riparian zone - it was the stream water, not the side-slope ground moisture.

## DATA SUMMARY

---

### WQ-31: Cover by community types in Winter Quarters Canyon (2007).

---

<b>UPLAND VEGETATION</b>	Cover (ft)
<i>Populus tremuloides</i>	10.00
<i>Picea pungens/Abies lasiocarpa</i>	10.00
 <b>RIPARIAN VEGETATION</b>	
<u>Dominant Woody Species</u>	
 <u>Dominant Herbaceous Species</u>	
 <i>Agrostis stolonifera</i>	3.00
<b>TOTAL COVER (Upland Species)</b>	20.00
<b>TOTAL COVER (Riparian Species)</b>	3.00
<b>ROCK (channel)</b>	0.00
<b>WATER (channel)</b>	3.00
<b>BAREGROUND (channel)</b>	0.00
<b>LITTER</b>	0.00
<b>MOSS</b>	0.00

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<b>TOTAL COVER</b>	26.00
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## PHOTOGRAPHIC DOCUMENTATION



WQ-31

RIPARIAN COMPLEX DATA SHEET  
2007

CLIENT: Canyon Fuel Company, Skyline Mines

COMPLEX: Number WQ-32

WATERBODY NAME: Winter Quarters Canyon Creek (Box Canyon)

LOCATION: Wasatch Plateau, Utah

DATE: August 21 - September 3, 2007

OBSERVER(S): P.D. Collins<sup>2</sup>

QUAD NAME: Scofield, Utah

GEOLOGIC PARENT MATERIAL: Blackhawk Formation

STEAM ASPECT: ENE

STREAM GRADIENT: 1-3 °

ELEVATION: 8,870 ft

SIZE OF COMPLEX: (see quantitative data)

ADJACENT UPLAND VEGETATION (looking downstream)

Left: Grass/Forb                      Right: Aspen/Conifer

VEGETATIVE DESCRIPTION (Dominance by Community Types)

Community Name	% of Complex
(refer to quantitative data results for this information)	

SUCCESSIONAL STATUS: Climax

APPARENT FORAGE TREND: Stable

ESTIMATED FORAGE PRODUCTION: 500 lbs/acre

BEAVER ACTIVITY: No

PHOTOGRAPH TAKEN: Yes

LAND USE ACTIVITIES THAT COULD INFLUENCE RIPARIAN AREA: Mining, grazing, hunting, recreation.

SPECIES OBSERVED:

Trees	Shrubs	Forbs	Grasses (or grasslike)
<i>Picea pungens</i>		<i>Equisetum arvensis</i>	<i>Agrostis stolonifera</i>
<i>Populus tremuloides</i>		<i>Geranium richardsonii</i>	<i>Elymus canadensis</i>
		<i>Mimulus guttatus</i>	
		<i>Rudbeckia occidentalis</i>	
		<i>Viguiera multiflora</i>	

#### POOL ATTRIBUTES

% area in pools: 10

% pool area made up of pools > 2' deep: 0

#### AQUATIC VEGETATION

% streambed with filamentous algae: 0

% stream margin with rooted aquatic: 0

#### BANK TYPE & VEGETATION OVERHANG

% bank length undercut (<90°): 0

% bank length gently sloping (>135°): 0

% bank length with overhanging vegetation: 100 (herbaceous)

#### BANK CONDITION

% bank length vegetated, stable: 100

% bank length unvegetated, stable: 0

% bank length vegetated, unstable: 0

% bank length unvegetated, unstable: 0

#### NOTES:

- 1) Good well-defined riparian zone.
- 2) Good water flow; flow also continues from upper canyon reaches.
- 3) It was thought that the riparian zone and sampling locations were well-represented in Box Canyon, so more sampling upstream was not done. We remained consistent with about 3 sample locations per mine panel width.
- 4) From the mine map we used showing the sequence and year of mining beneath the stream, the Box Canyon sample locations appear to be in-between 2009 and 2010 mining years (possibly more in the 2010+ mining years). Nonetheless, to avoid missing appropriate reaches, we sampled at these locations in 2007; the sample plan prescribes that sampling be conducted above the underground mine panels two years prior to mining, the year of mining, and two years after mining occurs beneath the streams.



## DATA SUMMARY

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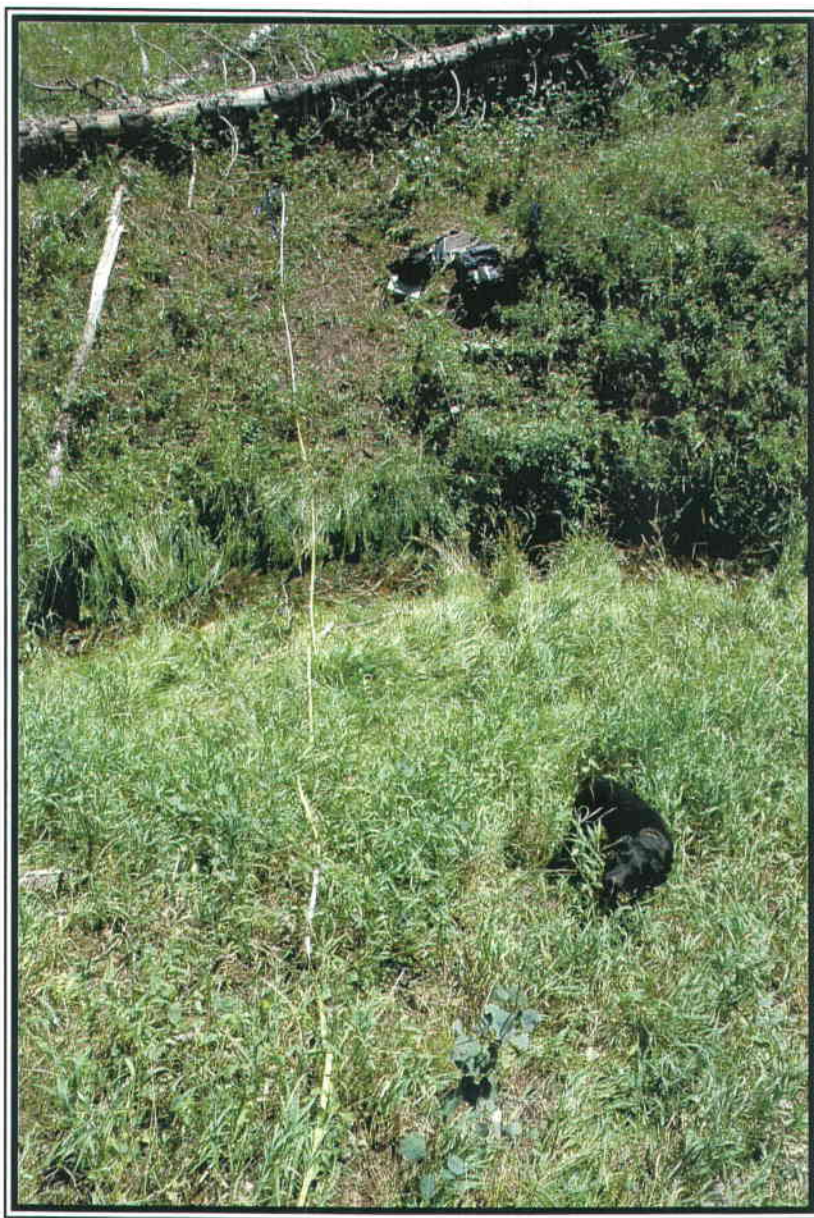
### WQ-32: Cover by community types in Winter Quarters Canyon (2007).

---

<b>UPLAND VEGETATION</b>	Cover (ft)
<i>Mountain Herbland</i>	10.00
<i>Populus tremuloides/Picea pungens</i>	10.00
 <b>RIPARIAN VEGETATION</b>	
<u>Dominant Woody Species</u>	
 <u>Dominant Herbaceous Species</u>	
 <i>Agrostis stolonifera</i>	7.50
<i>Agrostis stolonifera/Equisetum arvensis</i>	2.50
 <b>TOTAL COVER (Upland Species)</b>	20.00
<b>TOTAL COVER (Riparian Species)</b>	10.00
<b>ROCK (channel)</b>	0.00
<b>WATER (channel)</b>	2.00
<b>BAREGROUND (channel)</b>	0.00
<b>LITTER</b>	0.00
<b>MOSS</b>	0.00
 <b>TOTAL COVER</b>	32.00

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## PHOTOGRAPHIC DOCUMENTATION



WQ-32

**APPENDIX C**

**Legal Financial, Compliance and Related Information**

Annual Report of Officers  
As submitted to the Utah Department of Commerce

Other change in ownership and control information  
As required under R645-301-110

**CONTENTS**

None – Submitted by V. Miller for all CFC Mines

**APPENDIX D**

**Mine Maps**

As required under R645-302-525-270

**CONTENTS**

Skyline Mine, Mine 3 – Levels 2 and 3 As Mined 2007 - **Confidential**  
Skyline Mine, Mine 3 – Levels 2 and 3 Projected Mining March 2008-2012 - **Confidential**

**APPENDIX E**

**Other Information**

In accordance with the requirements of R645-301 and R645-302

**CONTENTS**

None